

# **JOURNAL** *of the* **American Veterinary Medical Association**

*Formerly AMERICAN VETERINARY REVIEW*

(Original Official Organ U. S. Vet. Med. Assn.)

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No. 4

## **SELECTING WHERE TO MEET**

For over a year, a special committee of the Executive Board has been engaged in an intensive study of the Constitution and By-laws of the American Veterinary Medical Association. There have been two important reasons for doing this. First, as a result of amendments which have been made during recent years, principally those incident to the creation and organization of the House of Representatives, several changes that should have been made were overlooked. These are minor in character and have come to light from time to time as questions have arisen on various points. In other words, actual experience under the new form of organization has revealed these dislocations, maladjustments, or whatever one may please to call them. Practically all of them can be corrected by minor operations. The second reason for studying our Constitution and By-laws results from the growth of the organization, the expansion of its activities and the increase in its ramifications during the past decade. Only those who have kept in intimate contact with these changes can fully appreciate them. They have been gradual in most cases. Growth has been steady and we believe healthy. There have been setbacks from time to time but none of these has been serious.

As we look back upon them, they appear now merely as incidents, such as any business has to weather with the passage of time.

One important matter which has not received the attention which it really merits is the method of selecting the places where our annual conventions are to be held. The meeting in Columbus last summer focused attention on this question. A. V. M. A. conventions have ceased to be modest in proportions. It is no longer a question of finding a place to handle a meeting of a few hundred people. There were approximately 1,850 at Columbus. With the double attraction of an International Veterinary Congress and an A. V. M. A. meeting in 1934, New York drew an attendance of over 1,800. Chicago did not do so well in 1933, as the country was experiencing the worst effects of the depression that year and the Century of Progress held down rather than increased convention attendance. In a normal year, Chicago would draw 2,000 people to an A. V. M. A. meeting.

With one exception we have never actually selected our convention city more than one year in advance. There have been gentlemen's agreements and tacit understandings, looking more than one year ahead, but nothing more than that. This brings up the question: Would it not be advisable to select each meeting place two years in advance? This question has been asked more than once. It is worthy of serious thought.

At present each convention city is selected by the House of Representatives. Formerly the selection was made in general session by those members in attendance at each convention. The present plan has one very strong point in its favor—the membership of the House of Representatives is distributed quite evenly geographically. The voting strength is not centered in any one part of the country. However, it has been suggested that the Executive Board should make the selection of each convention city. Now the Board is authorized only to fix the time, but may select the place if the House does not do so.

The most serious criticism that has been made of the present method of selecting convention sites is the lack of any provision for a preliminary investigation of the facilities offered by a city that wants an A. V. M. A. convention. Even the present method of selecting official headquarters in the convention city is attended by some risk. We long ago passed the point where "almost any hotel will do." Promotion managers of so-called convention hotels have been known to display more ability as ballyhoo artists than as convention hosts. Balloons and buttons do not provide an

ample number of suitable meeting-rooms. The hot air expended in soliciting a convention one year is apt to be remembered the following year—with considerable discomfort—unless the atmosphere is tempered by air-conditioning. In brief, our plea is that a thorough investigation should be made of the convention facilities offered by any city that wants an A. V. M. A. meeting, before any decision is made, the investigation to be conducted by a disinterested person or persons, properly authorized by the Executive Board. Only those cities found to have ample facilities and accommodations should be considered.

These two suggestions appear to be worthy of serious consideration by all members and officers.

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### A. V. M. A. RELIEF FUND

Contributions to the A. V. M. A. Relief Fund continued to filter in during the month of March, with the result that total contributions amounted to \$4,318.01. The number of contributors reached 678, located in 47 states, the District of Columbia, Hawaii, the Canal Zone and the Dominican Republic. A considerable amount of correspondence has been carried on with veterinarians in the flooded areas, in an effort to locate any who were in need of help. Several appeals for financial assistance have been received from veterinarians who had had misfortunes of one kind or another which were in no way connected with the flood. In view of the fact that contributions to the fund were made for a specific purpose, these requests had to be declined. Several excellent suggestions have been made in connection with the Relief Fund. One is that it should be made permanent. Another is that it should be available for helping veterinarians who meet with misfortune of any kind. The committee administering the fund will make some definite recommendations along this line at a later date.

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### EXECUTIVE BOARD ELECTIONS

The primary elections being held in Executive Board districts 1 (Canada) and 9 (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island and New York) will come to a close on April 20. As soon as possible after that date, ballots for the election proper will be mailed to all members in good

standing in the two districts. These ballots will contain the names of the nominees for each district. The polls for the election will remain open for 60 days, as provided in the by-laws.

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### FOUR IMPORTANT MEETINGS

Veterinarians will have no complaints to offer on the grounds of too few meetings to attend during the next few months. There will be at least four of these that will be outstanding, and they are so scheduled as to avoid any conflict of time, one in May, one in June, one in July and one in August. Also, these four meetings are to be held at points that will make it possible for more than 85 per cent of the veterinarians in the country to attend at least one of them with less than one day of travel. A large majority could attend all four of them with not more than one day of travel. Here are the meetings:

**American Animal Hospital Association.** May 6-7-8. Detroit, Mich.

**Ohio State University Veterinary Conference.** June 16-17-18. Columbus, Ohio.

**Eastern States Veterinary Conference.** July 7-8-9. New York, N. Y.

**American Veterinary Medical Association.** August 16-17-18-19-20. Omaha, Neb.

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### Another Kind Offer

Any member of the Twelfth International Veterinary Congress who lost his set of Proceedings of that Congress in the recent flood, may obtain a duplicate set, free of charge, by making his request direct to Dr. John R. Mohler, Treasurer 1620 Hobart St., N. W., Washington, D. C.

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### APPLICATIONS FOR MEMBERSHIP

Although the number of applications for membership filed during March fell considerably below the average for recent months, the number was about double the average for March as established during the years 1930 to 1936. The 21 applications given first listing this month bring the total for the first seven months of President Foster's administration to 260. Several of the best months of the year are still ahead of us. The approach of each annual convention always stimulates interest in membership, particularly in the states that will contribute the most heavily to the attendance. This year we expect material increases in A. V. M. A. membership in Nebraska, Iowa, Minnesota, the



Dakotas, Kansas and Missouri. Nebraska already has 21 applications to her credit, and is right on the heels of California with a total of 24 to date.

(See January, 1937, JOURNAL)

FIRST LISTING

- ABRAMS, GUY E. Box 2522, Reno, Nev.  
D. V. M., Ohio State University, 1910  
Vouchers: Warren B. Earl and Edward Records.
- ALTAKER, LT. ROBERT R. 331 Wabash Bldg., Pittsburgh, Pa.  
D. V. M., Alabama Polytechnic Institute, 1935  
Vouchers: Col. Robert J. Foster and Maj. Frank H. Woodruff.
- BAGLEY, RUSSELL O. 1510 Rainier Ave., Seattle, Wash.  
M. D. C., Chicago Veterinary College, 1911  
Vouchers: G. W. McNutt and A. J. Bonaci.
- BLACKBURN, LOREN C. 332 Federal Bldg., Lincoln, Neb.  
D. V. M., Kansas State College, 1933  
Vouchers: Neil Plank and J. E. Weinman.
- BROWN, ROSWELL L. 1817 Church St., Evanston, Ill.  
D. V. M., Cornell University, 1935  
Vouchers: J. V. Lacroix and C. N. Bramer.
- CAIN, H. DRISCOLL Box 572, New Hyde Park, L. I., N. Y.  
D. V. M., Cornell University, 1934  
Vouchers: J. Stuart Crawford and L. W. Goodman.
- CLAUS, NORMAN G. 3987 Maybury Grand Ave., Detroit, Mich.  
D. V. M., Michigan State College, 1936  
Vouchers: C. E. Mootz and David Marks.
- COOPER, JAMES H. Box 503, Laredo, Texas  
D. V. M., Kansas City Veterinary College, 1913  
Vouchers: H. L. Darby and M. E. Gleason.
- FISHERMAN, LT. HENRY 1400 Runnels St., Big Spring, Texas  
D. V. M., Texas A. & M. College, 1935  
Vouchers: Lt. Everett J. Siemer and Capt. M. Shipley.
- HOWARTH, CARL R. 320 4th Ave. S., South Saint Paul, Minn.  
D. V. M., Colorado State College, 1935  
Vouchers: B. B. Bowen and John A. Utterback.
- HUEBNER, RICHARD A. 217 E. Chestnut St., Coatesville, Pa.  
V. M. D., University of Pennsylvania, 1936  
Vouchers: F. E. Lentz and Howard M. Kalodner.
- MAUGEL, JOHN P. 525 Widener Pl., Philadelphia, Pa.  
V. M. D., University of Pennsylvania, 1935  
Vouchers: F. E. Lentz and C. J. Marshall.
- MEISELS, RAPHAEL 1749 49th St., Brooklyn, N. Y.  
D. V. M., Cornell University, 1934  
Vouchers: Lt. Daniel S. Stevenson and C. P. Zepp.
- MILLER, DONALD 105 Arizona State Bldg., Phoenix, Ariz.  
D. V. M., Ohio State University, 1936  
Vouchers: Elmer Lash and F. L. Schneider.
- MUELLER, ROBERT A. 2116 E. Colorado St., Pasadena, Calif.  
D. V. M., Cornell University, 1934  
Vouchers: Myron Thom and W. L. Curtis.

- MULLEN, HUGH E. 330 Federal Bldg., Madison, Wis.  
D. V. M., Iowa State College, 1919  
Vouchers: Wm. R. Winner and H. D. Larzelere.
- NEWBERG, AARON 1620 E. 35th St., Kansas City, Mo.  
D. V. S., Kansas City Veterinary College, 1909  
Vouchers: J. C. Flynn and B. F. Pfister.
- RIDDELL, WILLIAM K. 1909 State St., Santa Barbara, Calif.  
D. V. M., Colorado State College, 1935  
Vouchers: I. E. Newsom and A. R. Anderson, Jr.
- SMITH, ROLLIN R. R. 2, Box 345, Chino, Calif.  
D. V. M., Colorado State College, 1934  
Vouchers: J. L. Cavanaugh and W. E. Ivey.
- UPCHURCH, LT. JOHN W. 1601 N. Ballinger St., Fort Worth, Texas  
D. V. M., Texas A. & M. College, 1934  
Vouchers: H. L. Darby and Capt. M. Shipley.
- WALKER, DONALD M. 4901 S. 33rd St., Omaha, Neb.  
D. V. M., Kansas City Veterinary College, 1918  
Vouchers: Paul L. Matthews and W. T. Spencer.

### Applications Pending

#### SECOND LISTING

(See March, 1937, JOURNAL)

- Brown, Malcolm M., Marion, Va.  
Brown, Theodore W., Christiansburg, Va.  
Bunker, Ralph C., 636 Venice Blvd., Los Angeles, Calif.  
Christensen, Lt. Nels F., Fort Meade, S. Dak.  
Collins, John M., West Point, Neb.  
Cook, Frank B., Andalusia, Ala.  
Cornwell, James I., 435 Biltmore Ave., Asheville, N. C.  
Couch, Lt. Weldon M., C. C. C. Hdqrs., Tucson, Ariz.  
Davis, William L., 1509 North 5th St., Monroe, La.  
Gibson, James G., Florence, S. C.  
Gilyard, Richard T., 73 Field St., Waterbury, Conn.  
Gittings, R. F., 5242 W. Washington St., Los Angeles, Calif.  
Hall, Gus, 409 Post Office Bldg., Montgomery, Ala.  
Hannah, Paul S., Blackfoot, Idaho.  
Hayes, Hanceford W., Calera, Ala.  
Hayes, Howard, Calera, Ala.  
Helms, Carlos, Darlington, S. C.  
Hill, Leonard J., 627 Walnut St., Gadsden, Ala.  
Hirleman, Ward B., Waynesboro, Ga.  
Inman, Archie R., Box 1086, Sacramento, Calif.  
Lawrence, Walter A., 125 N. W. 23rd St., Oklahoma City, Okla.  
Lovell, Roy, 141 W. Madison St., Pasadena, Calif.  
McCauley, Earl D., 1313 W. 18th St., Sioux City, Iowa.  
Makin, Arthur S., 3504 Norwood Blvd., Birmingham, Ala.  
Miller, Walter R., 151 Harrison Ave., Mamaroneck, N. Y.  
Millerick, George L., 4820 Broadway, Oakland, Calif.  
Molohon, Moses A., 503 U. S. Courthouse, Fort Worth, Texas.  
Neal, William A., Oxford, Ala.  
Nettles, John R., 1102 State Office Bldg., Richmond, Va.  
Palmer, Paul G., Box 1086, Sacramento, Calif.  
Reed, Irvin S., Alabama Polytechnic Institute, Auburn, Ala.  
Schoentrup, Raymond V., Box 263, Rockymount, Va.  
Williams, John H., 615 Imperial Ave., Imperial, Calif.

Williams, Marvin W., Center, Ala.  
Wright, John L., Box 391, Staunton, Va.  
Young, Lt. Kenneth S., 1819 W. Pershing Rd., Chicago, Ill.  
Yule, Capt. Richard G., Fort Moultrie, S. C.

The amount which should accompany an application filed this month is \$8.75, which covers membership fee and dues to January 1, 1938, including subscription to the JOURNAL.

## COMING VETERINARY MEETINGS

San Diego County Veterinary Medical Association. San Diego, Calif. April 13, 1937. Dr. Donald E. Stover, Secretary, Zoological Research Bldg., Balboa Park, San Diego, Calif.

Kansas City Veterinary Association. Baltimore Hotel, Kansas City, Mo. April 20, 1937. Dr. C. C. Foulk, Secretary, 1103 E. 47th St., Kansas City, Mo.

Southern California Veterinary Medical Association. Chamber of Commerce Bldg., Los Angeles, Calif. April 21, 1937. Dr. B. B. Coale, Secretary, 203 Administration Bldg., Union Stock Yards, Los Angeles, Calif.

Southwestern Minnesota Veterinary Medical Association. Truman, Minn. April 27, 1937. Dr. Louis E. Stanton, Secretary, Jackson, Minn.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa. April 28, 1937. Dr. M. W. Allam, Secretary, Media, Pa.

Massachusetts Veterinary Association. Hotel Westminster, Boston, Mass. April 28, 1937. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

North-Central Iowa Veterinary Association. Hotel Warden, Fort Dodge, Iowa. April 28, 1937. Dr. H. C. Smith, Secretary, 2014 Eighth Ave. N., Fort Dodge, Iowa.

Southern California, Veterinary Hospital Association of. Los Angeles, Calif. May 4, 1937. Dr. L. B. Wolcott, Secretary, 1434 W. Slauson Ave., Los Angeles, Calif.

Connecticut Veterinary Medical Association. Dr. F. F. Bushnell's Hospital, Manchester, N. H. May 5, 1937. Dr. Geo. E. Corwin, Secretary, State Office Bldg., Hartford, Conn.

New York City, Veterinary Medical Association of. Hotel New Yorker, 8th Ave. and 34th St., New York, N. Y. May 5, 1937. Dr. J. B. Engle, Secretary, Box 432, Summit, N. J.

Saint Louis District Veterinary Medical Association. Melbourne Hotel, Saint Louis, Mo. May 5, 1937. Dr. Milton R. Fisher, Secretary, 3678 Dover Pl., Saint Louis, Mo.

- Houston Veterinary Association. Houston, Texas. May 6, 1937. Dr. Claude Canion, Secretary, 409 Link Rd., Houston, Texas.
- American Animal Hospital Association. Book-Cadillac Hotel, Detroit, Mich. May 6-8, 1937. Dr. D. A. Eastman, Secretary, 901 Nineteenth St., Moline, Ill.
- Ak-Sar-Ben Veterinary Medical Association. Elks Bldg., Omaha, Neb. May 10, 1937. Dr. W. H. Riser, Secretary, Glenwood, Iowa.
- Chicago Veterinary Medical Association. Anti-Cruelty Society, 157 W. Grand Ave. May 11, 1937. Dr. O. Norling-Christensen, Secretary, 1904 W. North Ave., Chicago, Ill.
- Hudson Valley Veterinary Medical Society. West Point, N. Y. May 11, 1937. Dr. J. G. Wills, Secretary, Box 751, Albany, N. Y.
- Southeastern Michigan Veterinary Medical Association. Detroit, Mich. May 12, 1937. Dr. F. D. Egan, Secretary, 17422 Woodward Ave., Detroit, Mich.
- Willamette Valley Veterinary Medical Association. Oregon City, Ore. May 12, 1937. Dr. Elwyn W. Coon, Secretary, Forest Grove, Ore.
- Colorado Veterinary Medical Association and Veterinary Short Course. Colorado State College, Fort Collins, Colo. May 19-21, 1937. Dr. Jay H. Bouton, Secretary, Aurora, Colo.

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### STATE BOARD EXAMINATIONS

- Oklahoma State Board of Veterinary Medical Examiners. State Capitol, Oklahoma City, Okla. April 5, 1937. Applicants should report to the State Veterinarian not later than 8:30 A. M. Dr. Walter H. Martin, Secretary, 101 S. Evans, El Reno, Okla.
- Nebraska Bureau of Examining Boards. State House, Lincoln, Neb. June 14-15, 1937. Applications must be on file at the Bureau at least 15 days prior to date of examination. Mrs. Clark Perkins, Director, Bureau of Examining Boards, State House, Lincoln, Neb.
- Illinois State Board of Veterinary Examiners. Chicago, Ill. July 19-20, 1937. Dr. L. A. Merrillat, president of the Examining Committee, asks candidates to file their applications with the Director of Registration and Education, Springfield, Ill., not later than July 1.

## SHEEP DISEASES\*

By F. E. HULL and W. W. DIMOCK

*Kentucky Agricultural Experiment Station  
Lexington, Ky.*

We realize that the infectious, non-infectious and parasitic diseases of sheep, that we have an opportunity to observe and study, may be quite different in frequency and importance from those occurring in other sections of the country. A summary of our postmortems on sheep for the past 2½ years shows that parasites were present in all the animals that were examined, while in 25 per cent of the cases parasites were the cause of death. Pregnancy disease accounted for 20 per cent, undiagnosed and unfit for diagnosis 12 per cent, pneumonia 10 per cent, poisoning 5 per cent, navel-ill 5 per cent and malnutrition 4 per cent. These seven conditions accounted for 81 per cent of our cases. The remaining 19 per cent were divided among 14 different diseases. These autopsy records are not a true indication of the occurrence of diseases among sheep as encountered in the field. For example, foot-rot is a common disease among sheep in Kentucky and yet not a single case of this disease appears in the postmortem records for the past 2½ years.

Foot-rot and some other diseases of sheep are responsible for economic loss to the sheep industry, but they do not cause a great deal of mortality. The order of importance and frequency of the causes of losses to the sheep-raiser in Kentucky, based on our postmortem records and the opinions of a number of practitioners, is about as follows: foot-rot, septicemia, malnutrition including pregnancy disease, pneumonia, navel-ill, mastitis, plant poisoning, abortion, ictero-hematuria, tetanus and loss from improper medication.

While this paper is not to include parasitisms, there have come to our attention many instances where the treatment for parasites was so closely related to other disease problems that it seems justifiable to mention some of them; further, if the veterinary profession is to take a part in the problem of dealing with sheep diseases, it must give consideration to such simple things as treating sheep for external and internal parasites. The following instances will explain our point in this respect.

\*Presented at the seventy-third annual meeting of the American Veterinary Medical Association, Columbus, Ohio, August 11-14, 1936. The investigation reported in this paper is in connection with a project of the Kentucky Agricultural Experiment Station and is published by permission of the Director.



*Case 1:* Seventy-five perfectly healthy lambs were treated for stomach worms in early May. Seventeen died from gastroenteritis. If the lambs were to be marketed before July they did not need treatment. The treatment was advised and carried out by a salesman for a company selling stomach-worm remedy.

*Case 2:* Three hundred lambs were treated for stomach worms with the result that 50 died. Here again the question comes up: Did the lambs need treating at the time and what factors were at fault in the anthelmintic used and the method of administration to have caused this severe loss?

*Case 3:* Thirty-two purebred sheep in good health and apparently free of both external and internal parasites were sheared, treated for stomach worms and, the following day, dipped, with the result that twelve out of 32 died from inhalation pneumonia.

#### SHEEP ARE NOT SCAVENGERS

The developers of the sheep industry in the eastern part of the United States, and in these we include commercial breeders who have breeding stock for sale, the packing interests and, last but not least, members of the Experiment Station staff, altogether too frequently place the emphasis on the point that sheep can be used as scavengers; that they will live on weeds and roughage not suitable for other species of domestic animals. In our opinion this is the worst fallacy that has ever been put out regarding the feeding of live stock. While there has been marked improvement in this respect during the last few years, the idea still exists in the minds of many sheep-owners.

Parasites and malnutrition, at least with us, present the most serious problem that we have to deal with. In speaking of malnutrition we must keep in mind both the direct and indirect results.

The next greatest chance for improvement in dealing with diseases of sheep is improved sheep husbandry. We have particular reference to housing and sanitation during and directly after lambing. Many cases of endometritis, many cases of mastitis and many cases of navel-ill and digestive disturbances of lambs are the direct results of filthy, insanitary surroundings.

#### A PLACE FOR THE VETERINARIAN

We take it that the main purpose of our discussion is to point out ways and make suggestions by and from which the veterinary profession may take a more active and effective part in the control and prevention of diseases of sheep. We must all realize that the practitioner of veterinary medicine is never going to

be called upon to any great extent to deal with individual cases of sickness in sheep. We are convinced that there is a place for the veterinarian in this problem of sheep disease control, provided he is willing and prepared to go to the trouble to establish a diagnosis and deal with the flock as a whole. With us the situation is something like this. The sheep specialists going out from our state institutions have devoted a great deal of time to treating sheep for stomach worms and docking and castrating lambs. This has been popular with the owner and without any thought of discrediting the work that has been done along this line it is apparent that it has been over-popularized and many other important things essential to successful sheep husbandry have been sadly neglected. Federal and state employes who have promoted this work have been ably assisted by the peddlers of commercial stomach-worm remedies and by representatives from the large market centers.

To talk with the owner about treating his lambs for stomach worms, about their increased value if they are docked and castrated and about the importance of dipping them, most of which he can do himself, establishes a friendly relation; but to tell the owner that his ewes are half-starved, that his barn is filthy and that his lambs are dying or not well because of improper feeding, poor sanitation, bad udders and just generally bad sheep husbandry, does not often lead to the most friendly relationship. The above may be taken by you and others as too critical and too extreme a view.

#### MAKE CORRECT DIAGNOSIS FIRST

Now let us look at the practicing veterinarian and his reaction and attitude to sheep diseases. In most instances he recommends vaccination without going to the trouble to make a diagnosis. If we, as a profession, are going to continue to vaccinate sheep against hemorrhagic septicemia or use a mixed-infection bacterin for flocks of sheep that are badly infested with nodular disease, hookworms, tapeworms and other intestinal parasites, for verminous pneumonia, for ictero-hematuria, for pregnancy disease, for malnutrition, for plant poisoning and many other real or imaginary conditions having no relation whatever to *Pasteurella oviseptica*, we cannot hope to make much progress in the control and prevention of sheep diseases, nor in convincing owners that we as a profession understand how to deal with sheep diseases.

The comment about vaccination of sheep against hemorrhagic septicemia is not to be taken to imply that we question the occurrence of this disease in sheep or the value and effectiveness

of vaccination, but rather that we should be more careful of our diagnosis and study the conditions and circumstances before recommending vaccination and thus not use a worthwhile product for conditions for which it is not intended and will not be effective.

As difficult as the problem is—and by this is meant the difficulty of always making a positive diagnosis and the economic question that owner and veterinarian cannot help but be forced to consider—there is, we believe, an opportunity for improvement that will prove beneficial to both the veterinarian and the owner.

We would go as far as to say that a veterinarian operating in a community where any considerable number of sheep are maintained should make it his business to become thoroughly familiar with all the parasitic, infectious and non-infectious diseases to which sheep are commonly subject. In addition he must know something about sheep husbandry, feeding, watering, sanitation, plant poisoning and general care and management. If, in addition to this, careful clinical observations are made and autopsies held as opportunities are presented one may soon become familiar with the nature of the diseased conditions peculiar to the sheep of the community and from all the information which can be assembled the logical and correct procedure can be determined in a high percentage of instances.

#### PREGNANCY DISEASE

In Kentucky, pregnancy disease usually occurs during the months of January and February, a few days to several weeks before lambing. The loss varies from 5 to 25 per cent of the ewes in the flock.

Pregnancy disease is not infectious or contagious but develops as a result of improper nutrition. Many ewes are in a low state of nutrition at breeding time. If such ewes are not fed so as to gain in weight, especially in the latter months of pregnancy, when the drain on the system is at its maximum and the requirement for essential nutritive elements is greatest, they may become so out of balance nutritionally that sickness develops.

*Feed requirements:* Studies in nutrition have shown that in addition to protein, carbohydrates, fat and fiber, the animal body requires a certain amount of a number of mineral elements and vitamins. All the essential elements used by the animal body are best obtained by the animal direct from the feed. If ewes are fed a sufficient quantity and variety of roughage and grain, it usually means that they are supplied with all the essential nutritive elements that animals need to maintain health and to produce

young. As the ewe approaches the time of lambing the need for proper nourishment increases; therefore, in a flock of ewes poorly nourished in one or more of the elements essential for balanced nutrition, there is danger that some of them may develop pregnancy disease during the last weeks of pregnancy.

Parasites and the popular belief that sheep need not be fed and watered regularly are predisposing causes of pregnancy disease. Parasites affect sheep of all ages, but are particularly severe on lambs. This results in a large number of cull lambs of low market value. Ewe lambs not in marketable condition frequently are retained as breeders. The parasites interfere with nutrition and as a result the ewe does not have a reserve supply of food elements in the body.

*Symptoms:* Ewes in the first stages of pregnancy disease lag behind the rest of the flock and refuse to eat or drink. There may be a tendency to walk in a circle or to stand with the head pressed against some object. As the condition progresses, the sick animals are found lying down more or less constantly, grinding the teeth, trembling and gradually becoming indifferent to their surroundings.

Pregnancy disease has been mistaken for hemorrhagic septicemia, grub in the head, nodular disease, botulism, pneumonia and poisoning. Many farmers report that the disease appears a day or two after salting. Sheep should have access to salt at all times.

*Prophylaxis:* Prevention of pregnancy disease depends on the selection of good, vigorous ewes as breeders, good feeding and the control of parasites, especially stomach worms. Prevention should thus begin with the selection of the animals that are to be used as breeders. Early ewe lambs that are well developed, well nourished and have been kept comparatively free of parasites should be selected. Such animals have a larger reserve of nutrients in the body and are more able to withstand the drain of pregnancy and lactation. The majority of breeding ewes are in rather poor physical condition at the time the lambs are weaned. Restricted feeding at this time aids in drying up the ewes and also helps to prevent the development of udder trouble.

Beginning two to three weeks before breeding, the ewes should be fed so that they gain in weight. It is imperative, after they become pregnant, that they retain this weight and continue to gain so that they will be in good condition at lambing time. To do this it is necessary that the ewes, from the beginning of breeding, have a liberal supply of water always available, receive

succulent pasture, from one to two pounds of hay per day, and from one-fourth to one-half pound of a grain mixture per day. The exact amount of hay and grain depends on the physical condition of the ewes. A part of the hay should consist of a legume, as alfalfa, lespedeza, red clover, soybean, cowpea, clover mixed with timothy or any good mixed hay. Perhaps the best grain mixture is equal parts of corn, bran and oats, with linseed oil meal in the proportion of 1 to 7. However, where a grain grown on the farm is available, a larger quantity of it may be used. Ewes in poor condition should be fed a grain mixture containing a larger quantity of corn.

While feeding, as above indicated, is the most natural and satisfactory method of maintaining proper nutrition of pregnant ewes, it might be advisable to feed a suitable mineral mixture. A mixture of one part of ground limestone, one part of sulfur and ten parts of common salt may be used instead of salt alone. Minerals should be fed to live stock only as supplements to rations that have been properly balanced. The proper use of linseed oil meal improves the ration and at the same time reduces the need for minerals as such.

The majority of cases of pregnancy disease occur in the older ewes directly following a sudden drop in the temperature, a cold rain, or a snowstorm. At such times the ewes may be temporarily cut off from free access to the water supply, winter pasture may become unavailable and shelter may or may not be provided. This sudden change in methods of feeding and management, together with exposure and a restricted water supply, may upset poorly nourished ewes that otherwise would not have developed pregnancy disease.

The following letter received along with a sheep last winter illustrates the point:

Fifty head sheep, age 4 or 5 years. Lost four ewes other snow spell. Lost three this last snow spell and one dying. Examine head and brain for grub worms and post mortem and write me at your earliest convenience and oblige, what you think is the trouble. Feeding hay and mill feed since last snow. Sheep get water at creek.

#### POISONOUS PLANTS

We wish to call your attention to the possibility of poisoning of sheep by plants, especially in the eastern states. Since a large percentage of the experimental work with plant poisoning has been done in the West with western plants, we are apt to forget that poisonous-plant problems may arise in the East.

A review of the available information indicates that there are at least 75 plants growing in Kentucky that may poison sheep.



Seven of these plants, spotted hemlock (*Conium maculatum*), wild cherry (*Prunus serotina*), white snakeroot (*Eupatorium urticaefolium*), water hemlock (*Cicuta maculata*), jimson weed (*Datura stramonium*), deadly nightshade (*Solanum nigrum*), and whorled milkweed (*Asclepias verticillata*), are considered to be of major importance. The remainder of these 75 plants cause trouble in sheep in rare instances.

**Occurrence:** The majority of our cases of plant poisoning occur in the early spring and during dry weather. Sheep are not so apt to eat poisonous plants provided other forage is available in sufficient quantities. In the early spring or during a drouth, weeds may be present in greater quantity than good forage plants. Some of these weeds may contain poison.

Poisonous plants usually grow along fences, on the banks of streams, in wet places and in wooded pastures; but rarely in open pasture. If it is thought that animals have been poisoned, suspicion should be directed to plants that have been grazed. The mere presence of a poisonous plant does not mean that it is causing trouble.

The majority of poisonous plants cause trouble provided they are eaten in sufficient quantity in rather a short time. Some plants have cumulative effects and cause poisoning after they have been eaten in small quantities at frequent intervals over a period of time. A few plants have a latent period and symptoms of poisoning do not appear for some time. A diagnosis is often difficult when plants that have cumulative effects or a latent period are causing the trouble.

**Classes of plant poisons:** Plant poisons have been classified in a number of different ways, but a classification based on the effect of the poison on the animal will probably be of most use to the practitioner. Plant poisons may act on the brain as narcotics, delirians or inebriants; on the spinal cord as convulsives; on the heart as depressants or asthenics; or be vegetable irritants and act as purgatives, abortives, irritants with nervous symptoms or simple irritants.

Plants that are suspected of being poisonous may be sent to your experiment station for identification. The complete plant, including the roots and flowers or fruit, should be sent if possible. The plant should be wrapped in waxed paper. Care should be taken in packing so as to prevent its being broken too badly in transit.

Specimens of poisonous plants may be preserved in a 10 per cent solution of formalin. Half-gallon fruit jars are large enough

for most specimens. This method of preservation allows frequent handling without damage to the specimen.

#### DISCUSSION

DR. D. W. BAKER: I wonder whether Dr. Hull has ever seen any cases of coccidiosis in which the sheep died from the effects of the disease.

With respect to plant poisoning, we were recently asked to investigate a case in which a man had a flock of sheep consisting of about 75 ewes and 75 lambs. They had been removed from a pasture because the grass had become too short for feeding and had been put on another field which had been used the previous year for raising potatoes. The vegetation consisted very largely of weeds, of which there was a considerable variety. Two or three days after the flock had been turned into this pasture, the owner noticed that the lambs were coming to the barn with their ears hanging down. An examination revealed a marked edema of the skin of the ears. In some cases the ears had become five times their normal thickness.

It was suggested to the owner that this was probably a case of plant poisoning, in which the consumed plant sensitized the animal to light, producing the skin edema. We asked for the aid of a botanist to examine all of the plants and he was unable to identify any one which he was sure might produce this condition. The man put his lambs in a cool, dark place and in time all of them recovered. Sometimes the skin broke and there was quite a bit of exudation. There was crusted serum on the surface. I wonder whether Dr. Hull has ever seen such a condition.

We have investigated several outbreaks of ovine coccidiosis in which we were sure the infestation with intestinal parasites was not responsible for the death of a considerable number of lambs. Postmortem examination revealed an extensive invasion of the intestinal tract, with hemorrhage, ulceration and many small white objects raised above the surface of the mucosa. These white plaques are accumulations of coccidial oöcysts.

DR. HULL: In regard to coccidiosis, you can find coccidia in almost any sheep you care to examine, if you examine them carefully enough. We have encountered a large number of cases where, apparently, coccidiosis was causing losses in lambs. I do not know that I have encountered a case where I thought coccidiosis caused losses.

In regard to sensitization, the late Dr. Howarth, of California, had a very good paper which was published in the *North American Veterinarian*, for January, 1931, on that question. There is rather a large list of plants that cause that particular trouble. We have encountered that several times. I think Sudan grass is one of the more recent plants, especially in Kentucky, because due to the drouth they are planting Sudan grass. I think that is one of the plants that is accused of causing photosensitization.

DR. T. H. FERGUSON: I should like to ask Dr. Hull how he treats coccidiosis in lambs.

DR. HULL: I hoped you would not ask that. I do not know how to treat it. I may be mistaken, but my opinion of coccidiosis in all animals is that it is a self-limiting disease. If you understand the life cycle of coccidiosis, it has a sexual and an asexual life, and, according to the protozoölogist, sooner or later it must pass through the sexual cycle, and when it passes through the sexual cycle, it passes out of the animal. So the whole trick in controlling coccidiosis is to prevent reinfestation, and the only way you can do that is to move

continually to cleaner ground, or else clean up the place where they are.

DR. FERGUSON: I refer to a bunch of sick lambs with coccidiosis.

DR. HULL: I have not had much experience but I think it would work about the same as it does with calves. You should clean their quarters every day.

DR. FERGUSON: What kind of diet did you put them on?

DR. HULL: I always hesitate to change the diet of sick animals too radically.

DR. FERGUSON: I have been informed that milk will take care of coccidiosis in sick lambs and goats.

DR. HULL: That was one of the first things suggested for the control of coccidiosis. Milk is laxative; it is nourishing, and, of course, from that standpoint it would be valuable in controlling coccidiosis. It would not have any curative values other than the laxative effect, and possibly some effect of the lactic acid, but in treating lambs, the best thing to do, if possible, is to keep moving to prevent reinfestation. That is the way I understand coccidiosis.

DR. L. D. FREDERICK: I have a few lambs to take care of in the course of a year, and I run into quite a little coccidiosis. I recently had a case where there were 1,500 involved. Quite a few had been lost. We put them on this milk proposition. I gave each lamb a quart of milk, ordinary skim milk, that I had given quite a high inoculation. I have also used ordinary powdered buttermilk when I could not get the other. As for other treatment, I have had very little success with the use of intestinal antiseptics and astringents, although some of the boys tell me they have pretty good success with using some of the astringents comprising the triple sulfocarbulates.

Following the milk administration, I have used a mixture of one-half alfalfa molasses meal, one-fourth powdered skim milk, and one-fourth shorts. For those that do not come right along after that, after a week or so, those that have seemingly been stunted, I think you will find that a little yeast mixed into the ration will help very materially.

DR. R. P. MARSTELLER: I wonder if anybody has tried sulfur for coccidiosis in lambs. Recent work at the University of Wisconsin indicates it is useful in the control of this disease.

DR. H. D. LARZELERE: I should like to ask the speaker what treatment he gives in pregnancy diseases after the disease has started, in the early stages, in ewes.

DR. HULL: We have treated a great many cases of pregnancy disease. The majority of our cases have been advanced. I think we saved three in eleven years. The last one we saved with intravenous injections of dextrose along with oral administration of blackstrap molasses. Cases of what we call pregnancy disease smell exactly the same as acetonemia in cattle. In what I call acetonemia in cows, you can smell acetone on the breath. You can smell the same thing on sheep.

DR. FERGUSON: Have you tested the urine of these ewes?

DR. HULL: No, we have not. If sugar is good for acetonemia in cows, it should be good for pregnancy disease in sheep. Before I go any further, I should like to say I believe there are at least two, and possibly three, different types of pregnancy disease in sheep. To explain that, I might say you probably are familiar with the fact that we treated milk fever as one disease for a long time. Now they are splitting it up. We have all sorts of things, acetonemia for one. That was complicating the picture of milk fever. I think we have the same situation in sheep.

If you have a condition in sheep in which the trouble is due to a lack of glucose resulting in improper metabolism effects, of course some source, some readily available source, of carbohydrates, such as glucose, would be beneficial. We treated one flock with blackstrap molasses. We did not save the ones that were sick, but we stopped the trouble. Of course, maybe there would not have been any more trouble.

### Ohio State Veterinary Conference

The tenth annual conference of the College of Veterinary Medicine, The Ohio State University, will be held June 16, 17, 18, 1937. This year, as formerly, the program is quite an extensive one and includes some of the foremost veterinarians and educators in this country. The entire three-day period will be devoted to the discussion of topics of vital importance to every veterinarian who can be present on this occasion. A special effort has been made in arranging the details of the program so that its quality and variety will appeal to all veterinarians.

The program this year has been formulated for the purpose of giving to the practitioner the very latest developments in veterinary medicine. It is generally conceded that such intensive short courses provide the necessary educational opportunities for the busy practitioner. The College of Veterinary Medicine hopes it will be possible for a large number to avail themselves of this opportunity to receive the very latest information concerning many of the real problems in their various fields of activity.

These short courses are sponsored by the College of Veterinary Medicine, believing it can render a real service to the live stock industry through the veterinary profession. In the past years the attendance has been very gratifying to those who have been interested in promulgating these courses. The interest manifested in the programs and the various discussions entered into by those in attendance has been a source of much gratification also. An invitation is hereby extended to all veterinarians to be present on this occasion to receive, we feel sure, much of value from an educational point of view.

The program for the conference will be mailed in the near future. You will observe in looking it over the names of many nationally known experts in their specific lines of work, assuring you of an excellent and instructive program during the entire period. Everything possible will be done to make your attendance at this conference pleasant and profitable.

Remember the dates, June 16, 17, 18, 1937. This is a change from former years.

O. V. B.

## STUDIES ON CERTAIN FILTRABLE VIRUSES

### I. Factors Concerned with the Egg Propagation of Fowl-Pox and Infectious Laryngotracheitis\*†

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During the past few years, the utilization of the developing avian egg for propagating various filtrable viruses has greatly facilitated the study of these important disease agents. Among the viruses attacking domestic fowl which may be cultivated indefinitely by this method are fowl-pox and infectious laryngotracheitis.

With the object of making available pure culture virus in quantities sufficient for studies dealing with pathogenesis, pathology and immunity, certain observations and findings relative to the factors concerned with egg propagation as observed in these studies are set forth in this report.

Inasmuch as propagation of the filtrable or ultra viruses presumes infection of living cells of the host or host tissue, the factors concerned with this phenomenon are considered from the aspect of (1) susceptibility of the avian egg to infection by the viruses of fowl-pox and of infectious laryngotracheitis and (2) factors influencing the infectivity or virulence of these viruses for developing susceptible eggs.

#### SUSCEPTIBILITY OF THE DEVELOPING AVIAN EGG TO INFECTION

It has been suggested that a lack of cellular and tissue differentiation accounts for the observed marked susceptibility of the embryo to certain agents (*e. g.*, vesicular stomatitis,<sup>1</sup> virus equine encephalomyelitis,<sup>2, 3</sup> herpes<sup>4</sup>) which are innocuous for mature fowl or the young chicken. However, with certain other viruses (*e. g.*, foot-and-mouth,<sup>5</sup> hog cholera<sup>6</sup>) a virtual absolute immunity corresponding to that of the mature fowl apparently is shown by the developing chicken embryo. In the case of infectious laryngotracheitis,<sup>8</sup> the developing chicken egg and turkey egg are readily infected by the virus which is limited to the chicken in its host

\*Presented at the seventy-third annual meeting of the American Veterinary Medical Association, Columbus, Ohio, August 11-14, 1936. These investigations were carried out in part in the Department of Bacteriology, Kansas Agricultural Experiment Station, Manhattan, Kan., and in part in the Division of Animal Pathology and Hygiene, University of Illinois, Urbana, Ill.

†Funds used in the purchase of the eggs inoculated in the experiments at the University of Illinois were supplied by the Smith Incubator Company, Cleveland, Ohio.

‡Assigned by the State Department of Agriculture to assist in diagnostic work.



adaptability among domesticated poultry. Duck, guinea fowl, and pigeon eggs proved refractory, thus suggesting that immunity or susceptibility of the developing avian egg is associated, at least in part, with factors other than simple lack of differentiation or immaturity.

*Inoculation of eggs of various species with fowl-pox virus:* This procedure was instituted primarily with the object of determining the susceptibility of the developing duck, guinea fowl and turkey to infection with fowl-pox virus but also with the hope that it might yield some information on the factors mediating susceptibility and resistance.

For inoculation, several series of eggs (duck, guinea fowl, and turkey) that had been incubated for periods varying from ten to 18 days and which showed vigorous embryos were employed. Control inoculations were made into chicken eggs previously incubated for twelve days. Various dilutions of chorio-allantoic pox lesion suspensions (strain K 1, eighth to tenth chicken-egg passage) were inoculated immediately beneath the inner shell membrane according to the routine method previously described.<sup>7,8</sup> All eggs were examined for evidence of infection either soon after death of the embryo or, in those which survived, during the period from three days after inoculation until the day before the hatching date. Proof of infection was established upon the appearance of gross and microscopic changes of the chorio-allantois and the presence of Borrell bodies in smears from the affected tissues. Infectivity of the lesion material obtained from each group of eggs was determined by inoculating both chickens and developing eggs. Table I includes a summary of the results obtained.

Although fowl-pox infection was obtained in all of the species of eggs employed, gross and microscopic variations from the

TABLE I—*Susceptibility tests to fowl-pox virus (strain K 1).*

SPECIES OF EGGS	EGGS INOCULATED	EGGS SHOWING POX INFECTION	HIGHEST DILUTION OF VIRUS PRODUCING INFECTION	PRODUCTION OF FOWL-POX IN CHICKEN EGGS AND CHICKENS WITH COMPOSITE EGG LESIONS
Duck	36	19*	1:1,000	+
Guinea fowl	18	12	1:10,000	+
Turkey	20	17	1:10,000	+
Chicken	17	14	1:30,000	+

\*Exclusive of 10 eggs, inoculated after 18 days of incubation, which failed to develop infection.

chicken-egg lesions were present particularly in the duck eggs. More marked edema with greater inflammatory and necrotic changes were observed, especially as the infective process became well established. The ten- to 30-fold greater end-point concentration of the virus suspension required in these experiments to initiate infection in the duck eggs is interpreted as suggestive of a lower degree of susceptibility of the duck-egg membranes to fowl-pox virus.

An apparent increase in resistance of duck eggs to pox infection noted after the 15th day of incubation would also seem indicative of a lesser degree of susceptibility. Infection was not obtained in ten duck eggs inoculated on the 18th day of incubation, while only seven of 15 treated on the 16th day developed pox lesions. Turkey eggs incubated for like periods and inoculated simultaneously with the same virus suspensions gave infection in 80 per cent of the inoculated eggs.

The susceptibility of developing chicken eggs to fowl-pox infection, as it may be influenced by the length of the incubation period prior to inoculation, was investigated. A number of eggs (247) in several lots were incubated 10, 12, and 14 days prior to inoculation with virus consisting of finely triturated chorio-allantoic pox lesions (strain K 1) suspended in 10 per cent glycerol-buffered broth solution. For comparative purposes, concentrations of 1:10, 1:100, 1:300, 1:1,000, 1:3,000, 1:10,000, 1:30,000, and 1:100,000 were employed.

Observed differences in the survival time of the embryos in eggs of various ages that developed pox infection did not appear consistent or significant. With relatively massive inoculations marked differences in the percentage of eggs which developed lesions were not observed. In several but not in all lots infection was obtained in the 10- and 12-day eggs with virus concentrations approximately ten to 30 times smaller than were required to infect 14-day eggs. A slightly greater tendency to metastasis, as indicated by the distribution of pock lesions, was noted within the chorio-allantoic membrane of the 10- and 12-day eggs, particularly when dilute virus suspensions were inoculated. Large confluent lesions confined to the membrane of the large pole of the egg were found in about equal numbers of the eggs of different ages which received concentrated virus suspensions.

#### INOCULATION OF EGGS OF VARIOUS SPECIES WITH INFECTIOUS LARYNGOTRACHEITIS VIRUS

The apparent insusceptibility of guinea fowl, pigeon and duck eggs to a strain (8090) of laryngotracheitis virus highly infec-

tive for both chicken and turkey eggs, as previously reported,<sup>8</sup> prompted duplication of the experiments with another strain (J) of virus. The J strain differed from strain 8090 in the gross appearance of the focal lesions in chicken-egg membranes as well as in being distinctly lower in virulence. The focal lesions produced by the J strain were smaller and quite globular or nodular with less tendency for the coalescence of adjacent foci as observed in the 8090 strain. Grossly they resembled small fowl-pox foci very closely. The lesions of the latter strain were flatter as compared to their diameter and showed a distinct necrotic core or center not characteristic of the J strain.\* Qualitative differences between the two strains from an immunological standpoint could not be demonstrated in tests upon chickens.

The details of the experiment with the J strain will not be discussed, inasmuch as similar negative results were obtained. Failure of guinea-fowl and duck-egg membranes to develop significant gross lesions, together with negative inoculation results obtained with membranes from eggs treated with virus six to eight days previously, was interpreted as evidence of a state of refractiveness to infection. A representative number of developing pigeon eggs were not available to allow verification of the negative results previously reported with this species of egg.

In tests to determine the most desirable age of developing chicken eggs for propagating laryngotracheitis virus, it was found that eggs incubated for twelve days prior to inoculation were preferable to those incubated for ten or 14 days. Not only were there fewer losses and variations than with the 10-day eggs but the potency of the virus in certain passages was maintained better than with those employing 14 days for inoculation.

#### FACTORS INFLUENCING THE INFECTIVITY OR VIRULENCE OF FOWL-POX AND OF LARYNGOTRACHEITIS VIRUS FOR DEVELOPING EGGS

It is recognized that within certain limits the factor of concentration of a given strain of virus is directly related to its capacity to initiate infection in the susceptible host tissues. Greater group uniformity as well as more delicate reactivity to various infective agents are advantages ascribed to the method of developing egg inoculation as compared to animal inoculation for measuring variations or alterations of infectivity or virulence.

\*After encountering these differences among strains of laryngotracheitis virus, the report by Burnet<sup>9</sup> came to our attention. These observations would seem to agree with Burnet's findings and to identify the presence of two groups of laryngotracheitis virus in this country corresponding to those encountered in Australia.

In utilizing egg inoculation freely to ascertain the influence of factors such as concentration, continued egg passage and storage on infectivity of fowl-pox and laryngotracheitis viruses supplementary inoculations of young chickens were carried out whenever feasible.

*Infective concentration as influenced by adsorption:* Selective adsorptive affinities have been observed for certain viruses including fowl-pox,<sup>10</sup> while adsorptive or cohesive phenomena between chemically inactive substances and various proteins are generally recognized.

In preparing tracheal exudates and chorio-allantoic lesions of laryngotracheitis for egg and chick inoculations and/or for filtration, a reduction in potency other than that due to contact with collodion membranes during filtration was frequently observed. The powdered Pyrex glass and the quartz sand commonly used to facilitate trituration of virus-containing tissues and exudates were subsequently tested for their adsorptive or inactivating effect upon laryngotracheitis suspensions. The grinding agents were added directly to the tissues before trituration but more definite results were obtained by the addition and thorough agitation within the various concentrations of virus after dilution had been effected. The results of similar tests subsequently carried out with fowl-pox suspensions are included in table II.

In the virus titrations upon eggs, four or more eggs were employed for inoculation with each dilution. The production of typical lesions in one or more eggs of the series was considered proof of the presence of virus if infection was produced in 50 per cent of the eggs of the series inoculated with the next greater concentration of virus tissues. Experiments dealing with the effect of these abrasive agents upon purified suspensions of the two viruses in question would seem necessary for further information. However, the effect upon virus-containing tissues although apparently negligible in some cases emphasizes that adsorptive or inactivating effects attributable to the presence of certain grinding agents cannot be overlooked in this problem. Where tissues of low virus concentration are triturated with sand or glass either with or without subsequent filtration, negative inoculation results may occur in some instances.

In several filtration experiments with laryngotracheitis egg-lesion and tracheal material the end-point dilutions infective for chickens six to eight weeks of age were determined before and after passage through 2 per cent collodion membranes prepared according to the method of Allisbaugh and Hyde.<sup>11</sup> The end-point dilutions as determined from two lots of virus (strain J)

TABLE II—*Effect of quartz sand and powdered Pyrex glass upon virus suspensions.*

TEST	ABRASIVE AGENT USED	CONCENTRA- TION AS COMPARED TO VIRUS TISSUES	SOURCE OF VIRUS	STRAIN	APPROXIMATE NUMBER OF TIMES IN- FECTIVE CON- CENTRATION WAS REDUCED
1	Quartz sand	10*	Tracheal exudate — laryngotracheitis	8990	10
2	Quartz sand	10	Chorio-allantoic lesion of laryngo- tracheitis	8990	10 to 30
3	Quartz sand	50		8990	300
4	Quartz sand	10*		J	10
5	Quartz sand	10*		J	0
6	Glass	10	Chorio-allantoic lesion of fowl-pox	J	10 to 30
7	Glass	10		K 1	10
8	Glass	10		K 1	0
9	Sand	10*		K 1	0

\*Sand added to tissue before grinding.

which were chilled to 0° C. before grinding in small glazed mortars, no abrasive added, were 1:30,000 and 1:10,000, respectively. Upon being centrifuged lightly, some of the supernatant fluid was subjected to purification by precipitation with citric acid according to the method described by Behrens.<sup>12</sup> Following immediate neutralization and ultrafiltration, this material gave titres of 1:1,000 and 1:500, respectively, while with the unprecipitated supernatant suspension of the first lot infection was obtained only with the undiluted and the 1:10 dilution of the filtrate. No infection occurred in chicks receiving the filtrate of unprecipitated suspensions of the second lot.

It is probable that the precipitation of the suspensions facilitated the filtration by removing particles or solutes which obliterate or reduce the size of the filter pores. This explanation is suggested by Gibbs<sup>13</sup> in his report dealing with laryngotracheitis virus and in the ultrafiltration studies of yellow-fever virus by Bauer and Hughes.<sup>14</sup>



## EFFECT OF CONTINUED EGG PASSAGE UPON INFECTIVITY AND FILTRABILITY OF THE VIRUSES

The data upon 45 continuous egg passages of laryngotracheitis virus (strain 8090) revealed a perceptible gradual loss of potency following the 35th egg passage. The infectivity both for developing chicken eggs and for young chickens apparently was diminished. It was considered probable that loss of potency was a result of leaving certain lots of eggs in the incubator for relatively long periods of time in order to determine the persistence of embryo viability. This explanation would seem plausible in view of the opinion of Goodpasture and Buddingh<sup>15</sup> that use of early lesion material, collected within 72 hours after egg inoculation, is essential to maintain the high infective potency and the original tissue affinity of dermal strains of vaccinia virus.

Later the possibility that the reduction in potency of laryngotracheitis virus due to incubation within the egg was investigated. Parallel series of eggs were inoculated with strain J of the virus, one with lesion material harvested during the third day of incubation, another series with tissue lesions of the same series of eggs but which had been harvested on the sixth and seventh days following inoculation.

Upon seven successive passages of the virus in this manner, the late harvested virus failed to produce infection consistently and greater concentrations were necessary to maintain it through subsequent serial passage in eggs. No significant alterations in virulence or potency were observed with the early harvested virus during the seven egg passages. The late harvested virus material showed a loss in virulence for chickens paralleling that for eggs.

The effect of continued egg propagation on fowl-pox virus has been observed particularly insofar as serial passage might alter the virulence or tissue affinity for the chicken skin in protective vaccination. Suffice it to say that repeated egg passages through 20 successive series of eggs has not changed the virus perceptibly insofar as the appearance of the skin lesions is concerned. The possibility that bacterial contamination common to comb-propagated fowl-pox virus is responsible for the somewhat larger "take" accompanied by more active inflammatory reaction would seem probable but has not been definitely established. In general, the filtrability of pox virus appeared to be enhanced by egg passage and as far as microscopic observations were carried out this improved filtrability did not appear to be associated with a change in size or character of the Borrell bodies.

*Effect of certain storage conditions on fowl-pox and infectious laryngotracheitis viruses:* During the early course of the work, it was the practice to store egg lesion "seed" virus of both fowl-pox and laryngotracheitis in an electric refrigerator at 6 to 8° C. The cotton plug of the test-tube used for collecting the virus was pushed down and a rubber stopper inserted. Without additional precautions laryngotracheitis virus was stored for three to five weeks without marked diminution in infective strength for the egg. Later, storage of the membranes at 0° C. in the freezing compartment was resorted to with a resultant slight increase in the time over which full infective potency was maintained. It was also found that entire affected chorio-allantoic membranes lost their potency less readily than small portions of such a membrane stored within a single tube. In our experience storage in buffered 50 per cent glycerin did not seem to preserve the full infective potency of the chorio-allantoic membrane virus for an appreciably longer period. Drying *in vacuo* over  $\text{CaCl}_2$  and  $\text{H}_2\text{SO}_4$  at 0 to 8° C. has since been adopted for storage of both laryngotracheitis and pox viruses whether they are to be used subsequently for egg inoculation or vaccine production.

For storing fowl-pox virus in the form of bacteria-free chorio-allantoic tissue, it was found that the infective potency was less subject to deterioration under the above-described conditions than was that of laryngotracheitis. However, it was deemed advisable and adopted as a routine practice to dry quickly at a low temperature all pox lesion material to be held over an appreciable period for egg inoculation or for experimental or field vaccination.

#### DISCUSSION

The foregoing observations have been recorded with the primary object of pointing out the influence of certain factors bearing upon the problem of continued egg propagation of fowl-pox and infectious laryngotracheitis viruses.

The apparent susceptibility of the several species of developing eggs to fowl-pox virus when compared to the limited susceptibility to laryngotracheitis virus, as observed with the procedure employed, would appear to be of more than superficial significance. In view of the adaptability of egg propagation, the nature of the membranes and the organism involved, the developing egg would seem to provide an ideal medium for studying certain intrinsic factors of immunity or resistance.

Although the developing avian egg shows a marked uniformity of response to various agents not manifested by the postnatal animal, certain discrepancies among developing eggs should be

expected. Due to cyclical variations in egg production as well as differences in the development of individual embryos, all eggs incubated for a certain period of days, *e. g.*, twelve days, do not represent parallel developmental stages. These factors may alone account for failure to obtain clear-cut results in a certain percentage of comparative titrations or susceptibility tests.

The importance of early collection, proper storage and handling of viruses, if successful egg propagation is to be facilitated, cannot be minimized. Only tissues with a maximal content of active virus are desirable for egg inoculation or vaccine production.

#### SUMMARY

A consideration of factors concerned with the egg propagation of fowl-pox and infectious laryngotracheitis viruses emphasizes that variations in susceptibility to infection among different species as well as within the species of egg employed may bear considerable significance. Various factors influence the infective potency or virulence of fowl-pox and infectious laryngotracheitis viruses insofar as continued egg propagation is concerned and failure to recognize them may complicate the application of the relatively simple technic of developing egg cultivation of the viruses.

#### ACKNOWLEDGMENT

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## CLINICAL RESULTS IN THE TREATMENT OF SO-CALLED FUNCTIONAL STERILITY OF COWS\*

By C. F. CLARK, *East Lansing, Mich.*  
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Veterinarians are not infrequently called upon to examine and treat cows which appear sexually normal yet fail to conceive. For want of a better term, such cases are termed "functional" sterility by many. In reviewing data on 442 cases of female bovine sterility, the writer noted 73 cases recorded as without organic lesion, many of which had been bred repeatedly to fertile males without conception. It will be the purpose of this article to outline some of the methods of treatment used in handling such cases and the results obtained.

It should be emphasized that all of the cases listed were examined carefully before treatment. The genitalia were palpated per rectum and a vaginal speculum was used to further attempts to detect cervical abnormalities. No case was included in this series which showed visible or palpable abnormalities of uterine cervix, uterus, oviducts or ovaries. All of the cows and heifers reported in groups I and III had regular estrual cycles and had been bred at least three times unsuccessfully to males known to be fertile. The animals listed in group II were heifers which had never been in heat, or cows which had failed to show estrus three to six months after parturition. In none of the cases reported was wheat-germ oil or any of the so-called vitamin E products used, as there was no good reason to suspect such element was deficient. It has been suggested to the writer that the time of year might have a bearing on such cases. This suggestion is based on the theory that there may be a nutritional factor involved, which grazing cattle receive and stabled animals are denied. In this connection the month in which conception occurred has been noted.

In general three types of treatment were used, saline douches, ovarian massage and either or both in conjunction with ovarian tissue extracts hypodermically (hormone therapy).

### GROUP I—TREATMENT WITH SALINE DOUCHES

Animals in this group were given douches of physiological saline solution during estrus, a short time before breeding.

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Heifers in most cases were given a vaginal douche only and cows usually were given a uterine douche followed by douching of the vagina. Following the douche, an attempt was made to remove the excess fluid by manual pressure on the dilated structures. A convenient outfit for vaginal douching was prepared by attaching a rubber, male horse catheter to an ordinary rubber, hot-water bottle. Where it was desired to irrigate the uterus, the same outfit was used in conjunction with a metal, uterine catheter of small diameter. Warm physiological saline solution was used as a douching agent because it was believed non-injurious, and because of its stimulating effect on spermatozoa. In a few cases the genitals were given a gentle massage. The treatment was repeated at each estrual period.

TABLE I—Representative cases. Group I.

CASE	AGE (YRS.)	TIME SINCE CALVING AT TREATMENT	TIMES BRED BEFORE TREATMENT	TREATMENT	TIMES BRED AFTER TREATMENT (PERIODS)	RESULTS*	MONTH IN WHICH CONCEPTION OCCURRED
1	2	Never pregnant	6	Saline douche	3	+	March
2	8	16 mos.	7	Saline douche and ovarian massage	1	+	June
3	1	Never pregnant	6	Saline douche	1	+	February
4	4	7 mos.	5	Saline douche	1	+	April
5	9	6 mos.	3	Saline douche	1	+	January
6	7	8 mos.	4	Saline douche	3	—	

\*+ became pregnant.

— failed to conceive.

#### Summary of group I

Cows and heifers treated (Ages 1 to 10 years).....	41
Total times bred before treatment	
(Individual 3 to 10).....	192 (Aver. 4.6)
Total times bred after treatment	
(Individual 1 to 6).....	81 (Aver. 1.9)
Cows becoming pregnant.....	38
Cows failing to conceive	
(Two bred twice each, one bred 3 times).....	3

#### GROUP II—TREATED BY OVARIAN MASSAGE

In this group of cases are included cows and heifers which did not show recognizable lesions of tubular genitalia, or ovaries, but whose ovaries did not show evidence of recent function. The ovaries showed neither recognizable Graafian follicles nor corpora lutea. As will be seen exemplified in the representative cases,



some of the younger animals in the group had never been observed in heat, though all were past customary breeding age.

Treatment used in all cases was ovarian massage. The majority of the cases were treated once or twice, the maximum number of such treatments in any one case was four. In two cases, after the ovaries had resumed function but estrus had not been manifest, the corpus luteum was removed.

TABLE II—Representative cases. Group II.

CASE	AGE (YRS.)	TIME SINCE CALVING	TIME SINCE LAST HEAT	TREATMENT	TIMES BRED AFTER TREATMENT (PERIODS)	RESULTS *	MONTH IN WHICH CONCEPTION OCCURRED
1	1	Never calved	Never observed	Ovarian massage (once)	1	+	April
2	5	3 mos.	2 mos.	Ovarian massage (once)	2	+	Sept.
3	2	3 mos.	Not since calving	Ovarian massage (4 times)	3	+	May
4	2	3 mos.	Not since calving	Ovarian massage (once)	1	+	March
5	1	Never pregnant	6 mos.	Ovarian massage (twice)	2	—	

\*+ became pregnant.

— failed to conceive.

#### Summary of group II

Cows and heifers treated (Ages 1 to 5 years).....	15
Total times bred after treatment	
(Individual 1 to 3).....	27 (Aver. 1.9)
Number becoming pregnant.....	14
Failed to conceive (Bred twice).....	1
Cows treated once only .....	9
Cows treated twice .....	3
Cows treated three times .....	2
Cows treated four times .....	1

#### GROUP III—TREATMENT WITH TISSUE EXTRACTS

Only a very small number of cases were treated with tissue extracts, hence the data presented are necessarily of limited value.

All the cases listed in this group showed no lesions of the genitalia recognizable by the writer. Most of these cases had been previously treated with saline douches or ovarian massage without apparent benefit.

The tissue extract used was a commercial product said to be obtained from ovaries after removal of the corpus luteum. The

method of application was to use one hypodermic injection of 10 cc shortly before the cow was bred. This particular product was used because it was suspected that in some cases ovulation was unduly delayed, and the use of this product might intensify the phenomena associated with estrus.

TABLE III—Representative cases. Group III.

CASE	AGE (YRS.)	TIME SINCE CALVING	TIMES BRED BEFORE TREATMENT	TREATMENT	TIMES BRED AFTER TREATMENT (PERIODS)	RESULTS*	MONTH IN WHICH CONCEPTION OCCURRED
1	6	6 mos.	4	Saline irrigation plus ovarian extracts (twice)	2	+	May
2	1	Never pregnant	3	Saline irrigation plus ovarian extract	1	+	Dec.
3	7	15 mos.	10	Saline irrigation plus ovarian extract	1	+	March
4	2	Never pregnant	3	Saline irrigation plus ovarian extract (3 times)	4	—	

\*+ became pregnant.  
— failed to conceive.

## Summary of Group III

Animals treated with ovarian extracts (Ages 1 to 12) .....	17
Total times bred previous to treatment (Individual 3 to 10) .....	78 (Aver. 4.5)
Cows which conceived following treatment outlined (Bred 16 times, an average of 1.6 per pregnancy) ....	10
Cows which failed to conceive following treatment outlined, but which later conceived following other or no treatment (Bred 18 times, an average of 3 per pregnancy) .....	6
Permanently sterile .....	1

## Summary of group III

1. Of a series of 41 cows and heifers bred a total of 192 times (av. 4.6), and without recognizable pathological changes, 38 became pregnant following the use of physiological saline douches before service. Following such treatment, the animals were bred a total of 81 times, or an average of 1.9 services per pregnancy.

2. Of a series of 15 cows and heifers without recognizable pathological changes, but whose ovaries appeared inactive, 14

TABLE IV—*Seasonal influence.*

MONTH IN WHICH CONCEPTION OCCURRED	ANIMALS BECOMING PREGNANT			TOTAL
	GROUP I	GROUP II	GROUP III	
January	4	2	0	6
February	6	0	1	7
March	6	2	3	11
April	7	1	0	8
May	1	1	1	3
June	3	1	4	8
July	4	0	1	5
August	0	3	0	3
September	1	3	2	6
October	3	0	0	3
November	1	0	3	4
December	2	1	1	4

Cows which conceived during pasture season (May to October, inc.)..... 28  
 Cows which conceived during stabling season (November to April, inc.) 40

conceived following treatment. To produce conception in these 14 animals, a total of 27 services were required or an average of 1.9 services per pregnancy.

3. Of a series of 17 cows and heifers bred a total of 78 times (av. 4.5), ten conceived during the period during which the ovarian extract used might be expected to have had influence. Sixteen services (av. 1.6) were required to bring about these ten pregnancies.

Of the remaining seven animals in this series, six later conceived but at such time as to preclude beneficial effect of the extract used.

#### CONCLUSION

From the limited number of cases reported, it would appear that douches of physiological saline solution, and ovarian massage were of value in treating some cases of so-called functional sterility. The use of ovarian extracts in a few cases did not show conclusive value. There was no conclusive evidence that a nutritional factor was involved, received by grazing animals and withheld from those stabled.

#### Veterinary Hospital Needed

An item in the March issue of *Dog World* stated that East Liverpool, Ohio, with a population of about 28,000, needs a veterinary hospital.

## SOME PHASES OF RABIES AND DISTEMPER CONTROL\*

By HARRY W. JAKEMAN, *Boston, Mass.*

The small-animal practitioner has heard so much and read so much about rabies and distemper that it would seem as though a discussion of anything pertaining to their control would be but a repetition of established facts and therefore a dry and uninteresting subject. Possibly I can arouse your interest by first making what may seem to some an unwarranted statement and then by bringing out substantiating evidence, at least to cause the members of this Association to give the matter careful thought and consideration. The statement is that the veterinary profession, more particularly the small-animal practitioner, is not adequately measuring up to the job of controlling these two diseases. Some will say about rabies that they never see a case; others will say about distemper that they have no trouble in controlling it when owners give them a chance.

Insofar as rabies is concerned, the time is at hand when it is necessary for the veterinary profession as a whole to realize that the control of this disease is *its* problem and not one for health authorities, either M.D.'s or laymen. Neither is it one for the dog industry, as was suggested in a recent veterinary publication. The activity of the many agencies other than veterinary which are taking a hand in the matter is little short of a disgrace to the profession.

As for the control of canine distemper, the cases are too numerous where the veterinarian himself admits failure and it cannot be denied that all too many owners and breeders are still skeptical as to the merits of vaccination against distemper.

Granting that rapid advance has been made in the development of biological products, they are not now and probably never will be 100 per cent efficient, both because of the human element involved in their administration and the variance in the ability to respond of the individuals receiving them. It has become a much too common practice for veterinarians to permit or even to encourage owners to believe that, when an animal has been vaccinated against either of these diseases, it is 100 per cent protected. Such has led to much confusion and dissatisfaction. We surely know that when we vaccinate an animal we do not render it absolutely immune.

\*Presented at the monthly meeting of the Veterinary Medical Association of New York City, October 7, 1936.

It would indeed be better if we were to eliminate the word immunize, as it has an absolute connotation which is deceptive. The stimulus given to the body cells for the formation of antibodies is merely a relative process resulting in an increased resistance to the disease sufficient to enable the animal to withstand the usual field exposure. In the case of distemper small-animal practitioners are learning rapidly that this term has been very loosely used, even as the old term "colic" in horses, which covered a diagnosis of one or a dozen pathological entities wherein pain was a symptom of one or all. In other words, with all the advancement which has been made in recent years with the microscope and x-ray as diagnostic aids, the study of blood chemistry, urinalysis, and so forth, we must admit that accurate, scientific diagnostic methods for distemper are lacking.

We have advanced very little over the old-type diagnosis based on seeing a young dog without appetite, perhaps running a temperature and showing some diarrhea and emesis. What diagnostic symptom have we that may not be associated with other conditions? In fact the complex syndrome of symptoms which have always lead to a diagnosis of distemper are now known to be, in at least some instances, the result of bacterial invaders rather than distemper virus and that they may occur independently of distemper. The existence of a leukopenia is significant but not pathognomonic of distemper. It is true that the reproduction of distemper-like symptoms in susceptible pups by the inoculation of Berkefeld-filtered spleen emulsion is fairly conclusive but this procedure is applicable only in kennel outbreaks or to prove that an animal had the virus of Carré in it. Such a laboratory checkup is seldom of value to a practitioner, certainly not as a routine procedure.

There are, of course, cases where the history, together with the symptoms, warrants a tentative diagnosis of distemper. When failure to obtain results from distemper serum occurs, the case should be studied with the idea of establishing a more specific diagnosis. Unfortunately many cases which do respond nicely to serum are not distemper. The serum reinforcement and stimulation given are sufficient to overcome other conditions such, for example, as certain toxemias.

#### GUIDING FACTORS IN DISTEMPER PROPHYLAXIS

In attempting to protect dogs against distemper there are three principal factors to be kept in mind. First, distemper



virus is an extremely delicate product under field conditions and its virulence is readily lost when the product is abused. Probably many animals are given a protection by the two doses of vaccine preceding the dose of virus which carries them through even though the virus be dead when used. Secondly, many pups are totally unfit subjects for vaccination. Too little attention is being paid to this and as a result failures are occurring, to the disgust of veterinarian and owner alike. While it is not possible to stimulate a relative degree of immunity in each and every animal, the percentage of failures would be much less if hookworm and other infestations, rachitis, endocrine deficiencies, anemia and other devitalizing conditions were taken into consideration before administering living virus. The work of Rous, McMaster and Hudack, of the Rockefeller Institute, not only opens up new fields of thought in connection with virus diseases in general, but undoubtedly explains some of the heretofore inexplainable occurrences in connection with their control. Briefly stated, these research workers demonstrated that virus after entering the body becomes attached almost immediately to living or dead tissue cells, that is, it becomes intracellular and is protected against immune serum as long as the cells remain viable. Thus it can be seen that virus can remain in the body even though antibodies abound in the circulation. It possibly explains why virus may be isolated from animals apparently immune and also advances one reason for the difficulty of treating virus diseases in advanced stages unless sufficient and repeated doses of serum be given.

Recently the work of Stafseth, of Michigan State College, has shown that a hemolytic streptococcus of canine type is a very frequent or possibly constant inhabitant of the throat of the dog and that it becomes a complicating factor in distemper. Undoubtedly secondary infection with hemolytic streptococci is the most serious and difficult secondary infection to overcome in the treatment of distemper.

The detection of anemia in pups constitutes an outstanding contraindication for the use of virus. It is common but too frequently overlooked, with disastrous or at least unfavorable results.

#### DIFFERENTIAL DIAGNOSIS

The third factor to be kept in mind when vaccinating against distemper is that too many ostensible failures will stand thorough investigation with the establishment of a correct diagnosis. Too frequently the owner's diagnosis is accepted *per se*. Some

of the things which require careful differentiation are toxic gastro-enteritis, hookworm and other parasitic infestations, infectious rhinitis, tonsillitis, laryngotracheitis, pneumonia, Stuttgart's disease, garbage poisoning, foreign bodies, paratyphoid fever, hemorrhagic septicemia of dogs and various subacute mineral poisonings.

We must admit that many of us are prone to jump at conclusions in connection with distemper or base a diagnosis on what we consider a characteristic history, characteristic symptoms, characteristic odor or a characteristic something else. The fact is that most of these so-called characteristic things are *not* characteristic and the time has arrived when greater care must be exercised in making a differential diagnosis. Failure to do this is going to result in a continuance of too many presumable breaks following vaccination, too many hospital breaks, unsuccessful treatment and a lack of lay confidence. Even though the virus of Carré be present, a correct diagnosis of complications is essential to bring the percentage of recoveries up to what it should be.

The interrelationship or similarity of virus diseases is becoming more apparent all the time and as an illustration the small-animal practitioner may well profit by the work which has been done in connection with hog cholera and associated infections of swine. Through the hog-raising sections, practitioners have feared the vaccination of apparently healthy hogs because of the animals harboring dormant pathogenic organisms such as *Pasteurella suisepitica*, the paratyphoids, *Salmonella suispestifer*, *S. enteritidis*, streptococci, and others. More recently, a great many veterinarians have encountered so much anemia in pigs, especially of vaccination age, that they have adopted a routine procedure before vaccination of checking the blood of a number of animals in each herd by means of a Talquist hemoglobino-meter scale. Vaccination of anemic pigs usually results in heavy losses. Within the memory of most of us, hog cholera was considered about the only serious disease of swine, and heavy losses were always attributed to it. When vaccinated animals sickened, the owner and the veterinarian wondered why, but usually considered that a break had occurred. Today the situation is different and a number of diseases can be differentiated, at least with the aid of the laboratory.

#### IMMUNIZE AGAINST SECONDARY INVADERS

The dog, if given a chance, is a scavenger and garbage-hunter. It has been shown scientifically that he frequently harbors many

organisms of a pathogenic nature. Frequently the intestinal tract, especially in puppies, has an excessive bacterial flora of putrefactive or fermentative organisms in addition to dormant pathogens. As previously stated, it is evident that care should be exercised in the selection of pups into which virus is to be injected and the precaution taken of vaccinating first against the most common secondary invaders as well as distemper virus.

In presenting this discussion of distemper control it is not intended as a wholesale condemnation or criticism of veterinary practitioners, but it is given rather as a stimulus to the more scientific handling of distemper, to more care in the use or misuse of distemper products and to greater frankness with owners.

#### RABIES CONTROL

The subject of rabies control may not be of particular interest to you at the moment. This, however, is a problem which the veterinary profession must face and while it may not be a problem today with you as individuals, it might be tomorrow. In many sections of the country rabies is a serious problem and because of its insidious nature can become a serious problem wherever dogs are found. Repeating my opening statement that the veterinary profession is not adequately measuring up to its job of controlling rabies, I wish to emphasize two phases of the subject which I believe will substantiate the statement and which it is hoped will bring forth an interesting and beneficial discussion.

Theoretically, there is no reason why rabies cannot be controlled or even eliminated for we have in our possession all the knowledge necessary to achieve this end. Why then is its control not being carried out?

First, there is in general a lack of public interest or demand and, secondly, because of the activity of misinformed individuals and antivivisectionists, whose articles are printed in the newspapers and various magazines, spreading misinformation and even discrediting the existence of such a disease as rabies. They usually go unchallenged by the veterinary profession and there has not been any organized effort to offset this propaganda. This, it would seem, might best be carried out by state or local veterinary medical associations through resolutions active committees on rabies, and the circularizing of the dog-owning public with official, informative literature published by these associations.

In connection with the work which might be carried out in an educational way, I wish to distribute a pamphlet gotten up by

a committee of the Massachusetts Veterinary Association several years ago. Over 100,000 of these pamphlets were printed and each member of the Association distributed whatever number he could to his clients. It was surprising how many boards of health throughout the state sent in for a supply, so that one could be given to each dog-owner at the time the dog was licensed. The pamphlet, as you will note, consists of questions and answers worded in simple lay terms and covering the subject in a brief but scientifically true manner. The distribution of this circular has undoubtedly had much to do with the holding of about 70 rabies clinics throughout the state annually, with about 21,000 dogs being vaccinated, in addition to those done privately, out of 40,000 licensed dogs in the state. These clinics have been put on by boards of health, with a veterinarian doing the work and the response has been very good indeed, with the added educational benefit to dog-owners and the public in general throughout the state. I trust the members of this association may see fit to start a similar educational program.

#### PUBLIC MUST BE EDUCATED

That education of the public regarding rabies is needed, cannot be questioned. Unfortunately veterinarians and physicians are occasionally found making statements that they doubt or even disbelieve that such a disease as rabies exists. There is no known disease which down through the ages has had so many superstitions and fallacies connected with it, and it is beyond understanding why so many intelligent, educated people still adhere to some of these fallacious ideas. Possibly one factor influencing this is the great variation in the incubation period. However, the fact which we have to face is that word is sent out from so-called authoritative sources that the control of rabies is nothing but a "racket." Permit me to quote from a few clippings. First, from an article appearing in a Boston paper over the name of Sue M. Farrell, President, Vivisection Investigation League:

For some years we have been investigating rabies and the inoculation of dogs against that disease. As a result we have found many veterinarians and kennel people strongly opposed to inoculation. The following extracts from letters received by me and from official government reports should prove interesting to your readers:

Frank F. Dole, Kennel Editor of the *New York Herald-Tribune*, owner of the famous Edgewood Kennels, Metuchen, N. J.—"I will say that my experience with inoculations of all kinds has been most sad."

Henri Vibert, canine specialist, Bound Brook, N. J.—“I am still looking for a case of rabies. The vendors of vicious catchpenny serums have now a very efficient business organization which goes into town after town stirring up rabies scares by so-called scientific talks under the auspices of boards of health.”

Again quoting from an editorial in the *National Sportsman Magazine* of April, 1935:

For all some of the best minds devoted to the study of bacteriology have been trying to produce an antirabies serum which will render a dog immune from rabies, the feat has not yet been accomplished. Furthermore, these one-shot serums have been tested by scientists both here and abroad and have been pronounced, for involved scientific reasons, actually dangerous. Commercial interests have been working through town, city and state governments for laws that will make one-shot antirabies inoculations compulsory, when such unquestioned research bodies as the U. S. Department of Agriculture and the Bureau of Animal Industry of Pennsylvania declare that the demanded inoculations are absolutely useless.

I might go on indefinitely, quoting such absurd statements. The above will suffice to substantiate the statement that the veterinary profession is not measuring up to its job in controlling rabies.

#### QUESTIONABLE RESEARCH WORK

In connection with the research work referred to as proving that rabies vaccine is worthless, it is indeed unfortunate that at least three pieces of poor scientific work coming from resources usually considered as reliable got into the hands of the laity. They have been seized upon by those opposed to the control of rabies and quotations have been widely disseminated. As has happened on several occasions in the past, failure to take into consideration certain fundamental factors in conducting experiments to determine the merits of biologics resulted in false deductions being made. In the case of testing the merits of rabies vaccine, the all-important fact was overlooked that the fixed virus of rabies used in the experiments will not produce rabies in any degree of regularity if it is injected intramuscularly or intravenously, but that it is highly pathogenic if injected subdurally or intraocularly. The dose of fixed virus administered intraocularly was greatly in excess of the amount of street virus which would gain entrance to the body through a bite wound.

The recent work of Schneider as reported in a paper read at the recent A. V. M. A. meeting shows that the intralingual injection of virus is a satisfactory method of testing rabies vaccine. Sheep receiving one 5-cc dose of vaccine showed 83 per cent pro-



tection. Those receiving 5 cc on two consecutive days showed 100 per cent protection. The experiments confirmed the established biological fact that multiple injections of an antigen confer a higher degree of immunity or resistance than a single injection and this applies in distemper as well as rabies.

As is always the case with biological products, the acid test of their merit is in the results obtained from field use and in the case of rabies vaccine this has proven beyond doubt, not only in many states throughout the country, but also in foreign countries, that it has real merit in raising resistance to the point where the incidence of rabies is very materially decreased. It has become an accepted truth, that a single injection of rabies vaccine increases resistance to the disease, so that an animal will withstand ordinary bite exposure for six months. If an animal be vaccinated twice a year the first year, and then once a year thereafter, it will have a reasonably strong protection against the disease.

#### RESULTS IN MASSACHUSETTS

In observing the results following the clinics held in Massachusetts during the past eight years, some very interesting cases have been found. In one town, Natick, Mass., clinics were started about eight years ago. The first year that a clinic was held, it happened that a few months after the clinic a dog with furious rabies came in from a neighboring town and bit seven dogs. Six of these dogs had been vaccinated at the clinic and the seventh had not been vaccinated. The unvaccinated dog died three weeks later with rabies and the six vaccinated dogs went through without any trouble developing. Naturally this sold the benefits of rabies vaccination to the town authorities in Natick and a clinic has been conducted each year since. It also became known in many other places and when rabies cases showed up, many of these places put on clinics. You are all familiar with the splendid results which have been obtained in Alabama, Kansas and other places where vaccination has been carried out.

In presenting this discussion of rabies control to you, I have made no attempt to cover the pathology of rabies, as it is very familiar to all of you. Should there be any question however, concerning rabies or the vaccines used in controlling it, I will be very glad to attempt to answer them.

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There is no worse evil than a bad woman; and nothing has ever been produced better than a good one.—Euripides.

## FUTURE VETERINARY EDUCATION IN AMERICA\*

By I. D. WILSON, Blacksburg, Va.

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Since the country is definitely committed to the New Deal, and it has become the custom for laymen to qualify themselves as expert critics for the most intricate problems, it would not seem improper for a veterinarian who has never served on a veterinary college faculty to say something concerning veterinary education. His perspective at least, is different from those who are more closely associated with veterinary colleges. Moreover, twenty years of experience in college teaching, a good part of which has included planning the curricula of biology, general science, pre-medicine and pre-dentistry students, and in directing the postgraduate work of a few veterinarians, places one in a position to view the whole field of medical education—at least in a broad way.

Veterinary education in America is suffering from chronic intramural self-satisfaction caused chiefly by a borrowed, antedated code of ethics (insofar as it holds that all which is learned must come from the profession of medicine). This is not surprising; in fact, it is almost a predictable circumstance. Other branches of medicine have suffered from the same malady but, fortunately for humanity, they are well on the way to recovery. The same treatment that turned the tide toward recovery in the better schools of the other branches of medicine can be applied to veterinary medicine.

The most recent step, and a big one it was, in improving the training of the veterinary student, was taken when the colleges adopted a minimum entrance requirement of one year of satisfactory college work. The effect of raising the entrance requirements is so well known as to need no discussion. It has already done much to build up the respect of the people at large for the profession and undoubtedly is in no small part responsible for the greatly increased number of applicants for admission to the veterinary colleges. This is a healthy state of affairs; it gives the veterinary colleges the same opportunity of selecting their students as the other professions enjoy. The wisdom of this step is no longer debatable. Not only are these students better prepared to assimilate the training offered by veterinary colleges but they are able to command more respect from their

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clients, and some will enter into fields of work from which men of less education are barred. Veterinary education by itself cannot be liberal. Professional education, in all lines, is restricted in its scope, and if the student does not have a liberal education when he enters a professional school, he will not have it when he is graduated. The average veterinary student of the present day is almost as highly selected as students in other branches of medicine.

#### CLASSIFICATION OF VETERINARY COLLEGES

In recent years, the Committee on Education of the American Veterinary Medical Association has studied and has attempted to bring about a classification of the veterinary colleges. The Committee has done commendable work. Doubtless its reports will have an effect in raising the standards of veterinary education, particularly if the deans of the colleges can use the results of the studies to gain greater financial support. The work of the Committee, however, has dealt principally with the physical equipment and the size of veterinary faculties. Needless to say, commodious buildings and large faculties, desirable as they are, do not in themselves make a good college. The quality of instruction is determined by the teacher. No committee of outsiders can appraise the value of the teacher by casual observation. The Committee has, undoubtedly, done the best that it can. It has made a definite contribution which should serve as a stimulus, but in the final analysis, the deans of the colleges, by virtue of being in a position to select their faculties, must shoulder the responsibility for improving the type of instruction offered by veterinary colleges.

#### BROADER EDUCATION FOR TEACHERS

In recent years, the advances in scientific knowledge have made possible the application of chemistry, physics and biology to medical science. Undoubtedly, the greatest advances in the field of medicine during the next fifty years (the period for which the student is now beginning his education) will be based upon the application of these fundamental sciences. Unfortunately, few men in the veterinary profession have possessed the foresight to subject themselves to the long and arduous training necessary to secure an adequate knowledge of these subjects. Thorough understanding of advanced physical and colloidal chemistry and biophysics, such as can be applied to biological and medical problems, requires training in mathematics through calculus.

Besides the fundamental sciences, a reading knowledge of scientific French and German is essential for the teacher to keep abreast of the recent progress in medical research. Many of the students now in veterinary colleges have had a liberal amount of training in the fundamental sciences and in foreign languages and are ready to apply them to the courses in veterinary curricula. If, however, the instructor has not received advanced training in these subjects, his teaching cannot be on the same high plane with that in other branches of medicine. His courses will be superficial, he is not likely to create in his students a desire to advance beyond his own limited knowledge. Students are quick to sense whether or not the instructor has the attitude of mind that results from schooling under the great masters of science.

#### IN THE HANDS OF THE DEANS

It is clearly the duty of the dean to make additions to his faculty only from men who have been given at least three or four years of undergraduate scientific training in their pre-veterinary work or two years of basic scientific training after graduation from a veterinary college. Furthermore, younger members of the faculty who have not had such training should be allowed the time to take it. The instructor should study biophysics, biochemistry, colloidal chemistry, physical chemistry and, most important of all, organic chemistry. Advanced work in mathematics is necessary for such training. After he obtains a thorough working knowledge of these subjects, plus a mastery of biology and the languages (not excluding English), he is then ready to sit at the feet of one of the great masters in his special field. This program (including the curriculum in veterinary medicine) requires at least eight or nine years of training beyond the high school, but there is no other alternative if the veterinary profession is to take its proper place among the other branches of medicine. With veterinary faculties of such training, and with students who are properly prepared to enter professional schools, veterinary colleges would graduate men who could enter fields from which they now, on the whole, are barred. The future of the veterinary profession is in the hands of the deans. If they do not recognize the necessity for highly trained scientists and scholars for their faculties and for rigidly selected students, it cannot be hoped that members of the veterinary profession will rank with other learned professions. Then, and then only, will the veterinary colleges become the great research and educational centers that they should be. As long

as men who fail in one college can transfer to another, and as long as veterinary colleges accept students who, while they have failed in colleges of other branches of medicine, yet pass the veterinary curriculum without difficulty, we cannot expect the public at large to look upon veterinary colleges as institutions of learning, of the highest order. Veterinary education has made great progress in the past three or four decades but it is doubtful whether it has kept pace with the advances made in education by other branches of medicine. Certainly its relative position is no stronger.

#### COLLEGES SHOULD TAKE THE LEAD

The veterinary colleges should be the leaders in medical education and research. The investigator who is trained to work with animals has decided advantages in the study of fundamental principles applicable to problems relating more directly to man. Veterinary researchers should be doing work of a type that will make the members of the other branches of medicine look to them for scientific discoveries of a fundamental nature. It is needless to say that, excepting in rare instances, the reverse has been the case. What of the teacher and researcher in physiology or chemical pathology? The latter is almost a virgin field. Both demand the most advanced training in chemistry and physics. What of the virus diseases? Are we going to wait for the plant pathologists and graduates of other branches of medicine to tell us what a virus is? What of the malignant tumors? Do they not offer a challenge worth the cost of the preparation necessary to their intelligent investigation? These and many other problems present themselves as obligations and opportunities for service to thoroughly trained scientists of the veterinary profession. The assertion, often made by college students, that the veterinary profession does not offer the opportunities for distinction that other branches of medicine do, is untrue, yet this popular belief keeps many good minds out of the veterinary profession. There are opportunities enough, perhaps more than in any other branch of science, but only highly trained men, of outstanding ability, can grasp them. We need to formulate a new concept of what constitutes the field of the veterinary profession. It should not be restricted to the prevention and treatment of diseases of animals, important as they are and always will be.

#### ADVANCE WE MUST

Of course, no one of sound judgment would for one moment recommend that men who have given the best part of their lives



to veterinary education be dropped because they have not been given advanced training in the fundamental sciences. They are useful men certainly; but they can make themselves more useful if they admit their weaknesses and strive to build up their departments with men of broad, scientific knowledge upon which is built a sound professional training. The advances must be evolutionary, but advance we must.

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### To Keep Rabies Out of Panama

On and after July 1, 1937, dogs and cats, to be admitted into the Panama Canal Zone and the terminal ports of Panama and Colon, must be accompanied by certificates stating that they are not suffering from any contagious disease and that during the twelve months preceding proposed admittance they have not been exposed to infection with rabies. Copies of the certificate may be obtained from the Chief Health Officer, Balboa Heights, Canal Zone.

The Canal Zone and the republic of Panama have been free of rabies for some time in spite of the persistent, widespread existence of the disease in animals, and only to a lesser extent in man. The Panama legislature recently legalized dog-racing in the republic and it was believed that this act would be followed by the importation of a considerable number of dogs. Therefore, it seemed desirable to place some restrictions on dogs entering Panama. Later, it may be found necessary to impose a quarantine (60 days), in addition to the present regulation.

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### Phi Zeta at Cornell Elects

At a meeting of Alpha Chapter of Phi Zeta, Honorary Society in Veterinary Medicine, on March 5, 1937, the following students of the New York State Veterinary College at Cornell University were elected to active membership:

*Seniors:* Irwin Herbert Roberts, Herbert Racoff, Morris Siegel, Jack Edward Baker and Leon Jules Lacroix.

*Juniors:* Alexander Morris, Robert Morris, Stephen Roberts and Benedict Victor Favata.

*Faculty:* Dr. C. Carlton Ellis.

At the same meeting, Dr. C. P. Zepp, prominent small-animal practitioner in New York City, was elected to honorary membership.

H. L. G.

# A HISTOLOGICAL STUDY OF THE ADULTERATION OF SAUSAGE\*

By W. T. S. THORP† and DON R. COBURN‡  
*Michigan State College, East Lansing, Mich.*

## INTRODUCTION

Laws pertaining to the wholesomeness of meats date back to biblical times. The Mosaic laws governing the use of meats were based on sound principles of health as observed in that period. Through the ages, many changes in these laws have been found necessary to keep pace with our increasing knowledge of the principles of health and disease and with the cupidity of mankind. The practice of adulteration of meat products by the use of foreign materials such as plant, animal or chemical substances as a means of cheapening the product dates back to the first prepared meat products. The necessity for a laboratory examination of prepared meat products is a result of an act passed in 1933 by the State of Michigan governing the preparation and constituents of such products as sausage.

## HISTOLOGICAL TECHNIC

The samples, identified by number, are submitted to the laboratory with a statement as to grade and name of product. As soon as the sausage is received, samples are taken from each specimen. Usually, two or three pieces of material are submitted for test. A small block, approximately 1x2.5x0.5 cm, is taken from each piece of material and placed in Zenker's fixing solution. This should be done as soon as possible after the sausage is received. Bulk sausage should be kneaded into a firm piece before placing in the fixing solution. This is to prevent the sausage from falling apart during fixation. In some cases, it may be necessary to place the sausage in cardboard forms or cheesecloth sacks until the tissue is embedded, or at least until it is fixed.

The following is an outline of the procedure prior to sectioning:

1. Zenker's solution .....24 hours
2. Running water .....24 hours
3. 80% alcohol .....24 hours
4. 95% alcohol .....20-24 hours
5. Absolute alcohol .....8-12 hours
6. Cedarwood oil .....24-36 hours
7. First paraffin bath.....10 hours

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†Pathologist to Michigan Department of Agriculture and Assistant in Animal Pathology, Michigan State College.

‡Pathologist to Michigan Department of Agriculture, 1928-1935.

8. Second paraffin bath.....12-14 hours
9. Embedded in 56° C.-58° C. paraffin (52° C. paraffin used for the paraffin bath).

The time limits in the foregoing procedure must be varied, depending upon the particular type of sample. In pork sausage, it is best to leave the material in the alcohols and cedarwood oil for the upper limit of time. By so doing, better sections are obtained.

The paraffin-embedded blocks are sectioned on a microtome the same as any pathological or histological material. Sections 7 to 8 microns are preferred, although slightly thicker ones can be used. The sections are placed on clean slides with egg albumen as the fixative. When making several slides of one block, it is essential that serial sections be taken. By using serial sections, one will get a more representative picture of the sample from which to draw a conclusion. When the sections have dried twelve to 24 hours, they are stained in eosin-methylene blue or eosin-hematoxylin stain, the latter being preferred for all sausage material. Harris' alum hematoxylin is the most satisfactory of the hematoxylin stains. In the staining procedure, slightly more hematoxylin should be left in the section to bring out the nuclear characteristics to a better advantage. This is accomplished by decreasing the time for decolorization. Sausage material will take the eosin stain very readily; therefore, the time should be decreased about one-fifth.

It should be remembered that in staining such material as sausage the ability for the stain to take will vary somewhat in different samples. An explanation for this has not been definitely put forth. The time in the last alcohols and carbo-xylol should be increased to obtain clearer slides. The sections are mounted in balsam and are then ready for examination.

#### ADULTERANTS

From a histological point of view:

1. *Tripe and rumen*: The phraseology "tripe and rumen" would be misleading if the two terms were not defined. "Tripe" is defined as that part of the rumen prepared for use as food. The epithelial layer may or may not have been removed. The term "rumen" in this instance is used to include the parts of the rumen not prepared as food. The epithelial layer of this part is stratified squamous epithelium on which keratinized areas may occur. The muscular portion of this material is smooth muscle. Rumen usually appears as the cross-section of a papilla.

2. *Glandular tissue*: The glands of and associated with the digestive tract should be considered as a key to the identification of the latter. The salivary glands consist mainly of the parotid, submaxillary and sublingual. The parotid glands, the cells of which never undergo mucus transformation, are entirely serous in nature. The submaxillary gland is a mixed serous and mucous gland as is the sublingual, which is mostly mucous, the latter gland having considerably more mucous cells than the sublingual. The other salivary glands which all contain varying amounts of mucus and albuminous substances need not be discussed in detail. The characteristic structure of the intestinal glands is such that they would not be confused with the salivary gland. Spleen, pancreas and liver are easily identified.

Another glandular adulterant, such as udder tissue, may present a problem in identification, depending on the period of lactation. The alveolar gland structure is easily identified. If the alveolar epithelium is partially destroyed by the process of preparing the sausage, an identification can be made by the large amount of interalveolar connective tissue and interlobular connective tissue. One should be very familiar with the histology of the lactating and non-lactating gland.

3. *Miscellaneous tissues*: Lung tissue is easily identified by its bronchioles and alveolar structure. The smaller bronchi may be seen in some instances.

Skin and tissues like muzzle and snout are identified by their epithelial layer and the presence or absence of hair follicles. Tongue is identified by the peculiar type and arrangement of the muscle fibers.

The use of various wholesome parts of carcasses, other than those specified for use in sausage of grades one and two, is not prohibited providing the products are sold under trade names and not as "sausage." "No product shall be sold as sausage, except liver sausage and blood sausage, which is not graded as above and which does not come within the classification of one of the two grades as provided for."\*

#### MICROSCOPIC EXAMINATION

The examination of the slides by the use of a good compound microscope is probably the most important step in the histological examination of sausage products. If one is contemplating the examination of such material as outlined in this article, it is advisable to obtain, through the coöperation of some sausage

\*Michigan Sausage Law of 1933, Act 259.

manufacturer, known samples which have been made up under the supervision of the examiner. These should include all the adulterants in table I.

1. *Tripe and rumen*: The histological factors mentioned previously should be kept in mind. One should study very closely the histology of any material suggestive of tripe or rumen that may appear in the sample. The epithelium will stain a dark blue and must be studied under the high power. The identification of plain muscle tissue will present a problem, depending somewhat upon the quality of the stain; the variation in the staining reaction should be kept in mind.

A typical piece of rumen, undoubtedly a cross-section of one of the folds or papillae, is seen in figure 1. The keratinized epithelium is readily seen with the low-power objective. With the high magnification the plain muscle fibers can be identified between the two epithelial layers.

The characteristic appearance of tripe is illustrated by the muscular portion of the wedge-shaped block of tissue in figure 2. Compare this surface with the epithelial layer in figure 1 and the three pieces of material in figure 3, which is a low magnification picture of a microscopic field showing three pieces of rumen. By the study of known samples and some experience, one soon can become acquainted with the points necessary for an accurate diagnosis of such material as tripe and rumen.

2. *Glandular material*: The identification of gland tissue is probably a more difficult task than identifying the previous adulterant. The identification of salivary gland is not difficult, but distinguishing the three types of this gland is a problem. To distinguish between the parotid and other salivary glands is important in arriving at a diagnosis of head meat. The parotid gland is so situated as to be divided occasionally when the head is removed, so that a small portion remains on the carcass and appears as an adulterant in the sausage. There should be no question of the fact that the parotid gland is a structure of the head.

Figure 4 is an example of partially cooked or slightly broken down salivary gland. This, undoubtedly, is from the parotid gland, as all cells which can be seen on higher magnification are of the serous type. In this slide, the gland structure is not so recognizable with magnification as some specimens. In figure 5, the glandular structure is readily noticeable under low magnification. Upon high magnification a few gland cells appear as mucous type. This is probably a submaxillary salivary gland.



TABLE I—Meat products examined over the four-year period, January, 1933, to January, 1937.

	BOLOGNA	H. C. FRANKFURTERS	PORK SAUSAGE	H. C. VIENNAS	FRANKFURTERS
ADULTERATED					
1933	Salivary gland	2	Gland, cartilage and skin	1	
			Poor Quality		
	2	1	3		
	4	2	5		
ADULTERATED					
1934	Gland and snout	1	Salivary gland	1	
	Salivary gland	2	Udder tissue		
			Poor Quality		
	6		3	1	1
NEGATIVE					
	18	1	11	2	3
ADULTERATED					
1935	Lung tissue	2	Salivary gland	1	Salivary gland
			4	Salivary gland	2
	Ears, gland and lung tissue	3	Intestinal and gastric mucosa and intestinal wall	1	Beef
			2	2	Udder tissue
	Lung tissue salivary gland	2	Lung tissue	1	Lingual muscle gland
			1	1	Cartilage salivary gland
	Salivary gland	4	Cervical glands	1	Mandibular mucosa and salivary gland
NEGATIVE					
	5	1	3		2
	20	2	27	3	12



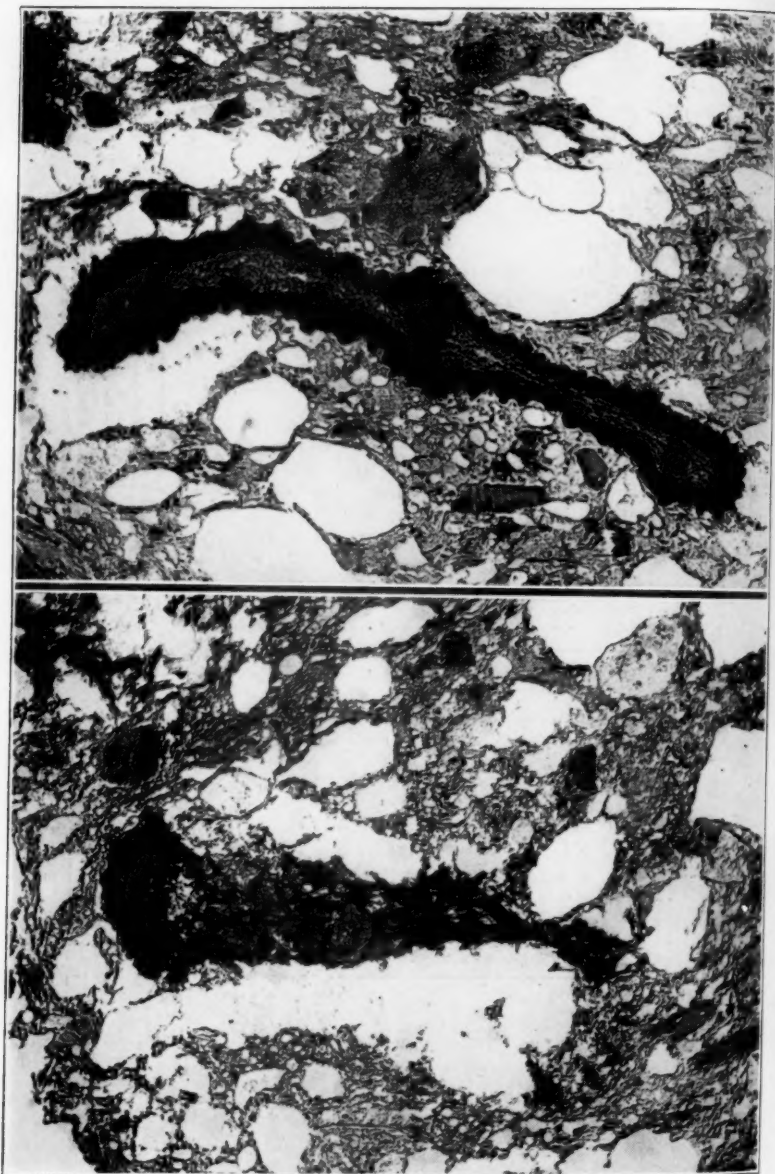


FIG. 1 (above). A typical piece of rumen, undoubtedly a cross-section of one of the folds or papillae.

FIG. 2 (below). Characteristic appearance of tripe (muscular portion of wedge-shaped block of tissue).

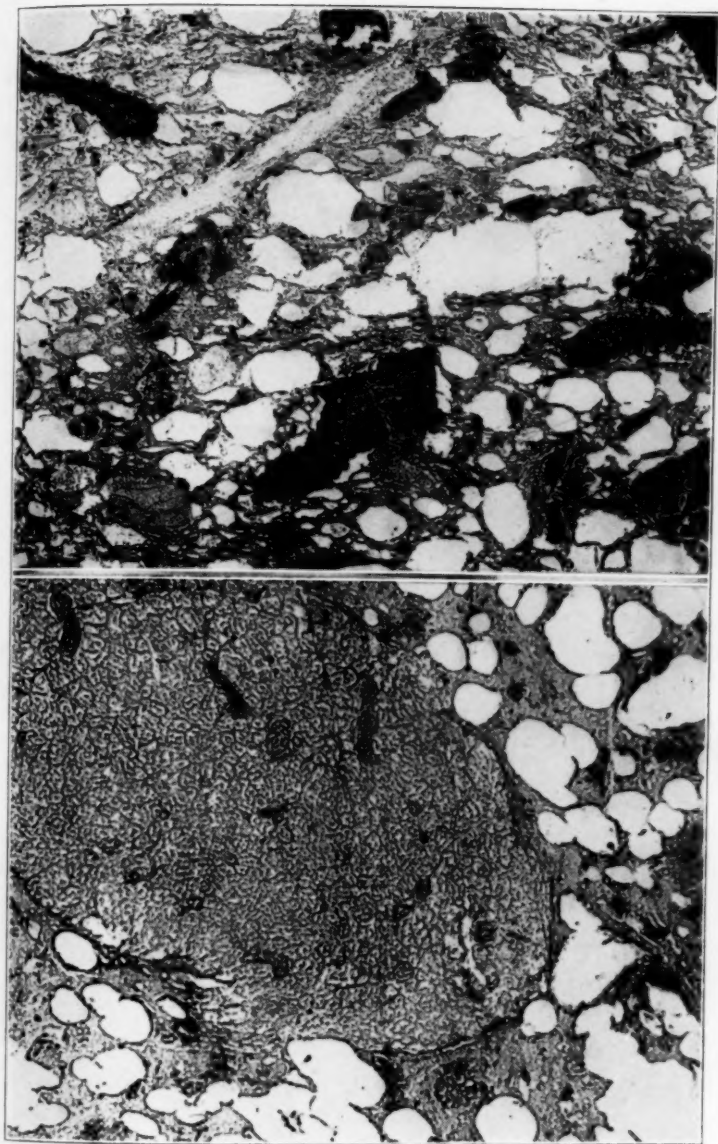


FIG. 3 (above). Three pieces of rumen (low magnification).  
FIG. 4 (below). Partially cooked or slightly broken down salivary gland.

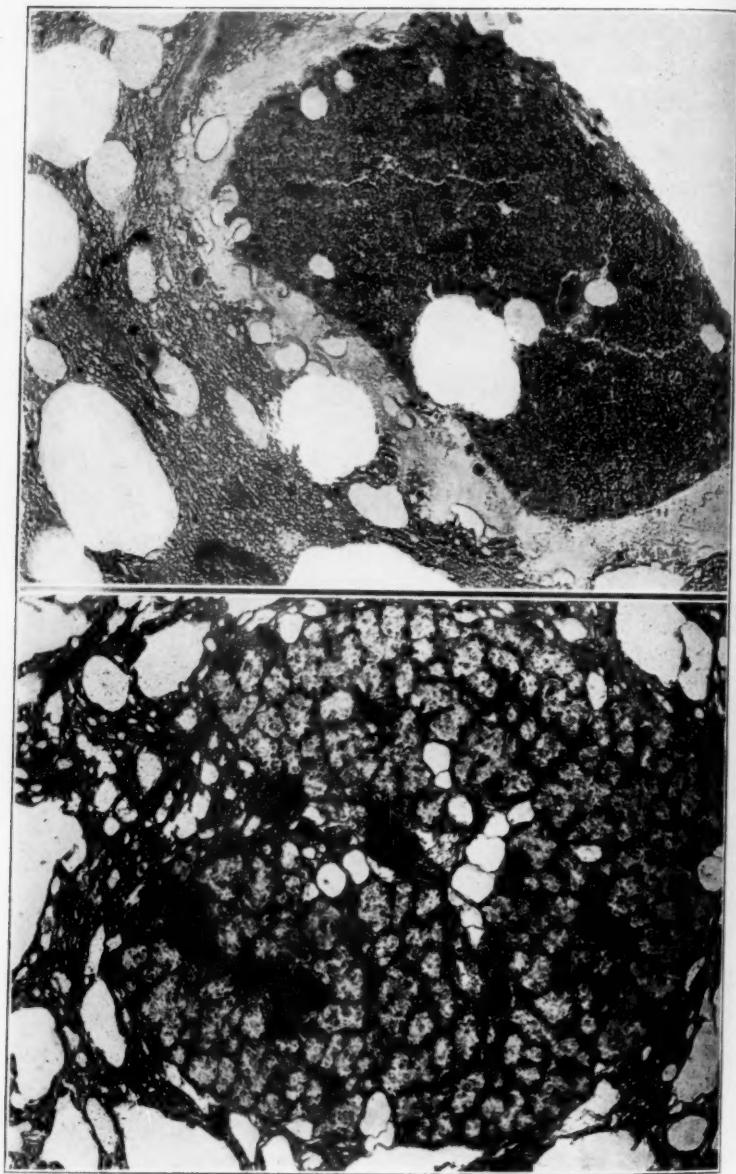


FIG. 5 (above). Probably a submaxillary salivary gland.  
FIG. 6 (below). Gland of mucous type (either glossopalatine  
or sublingual).



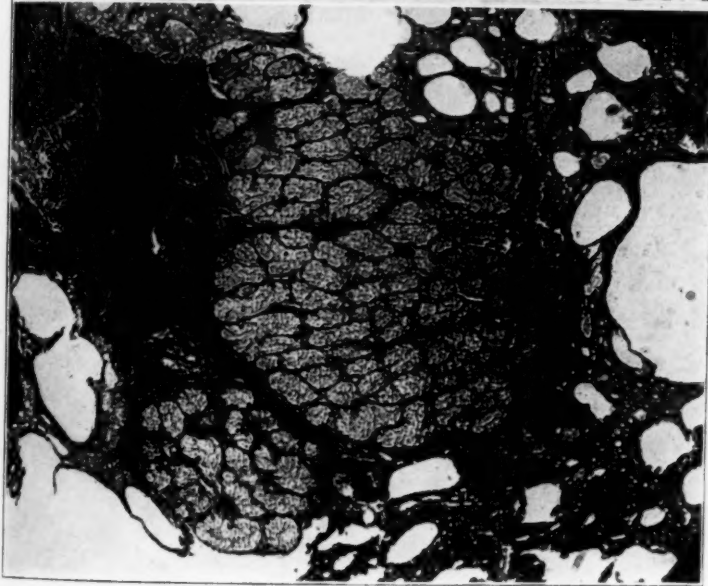
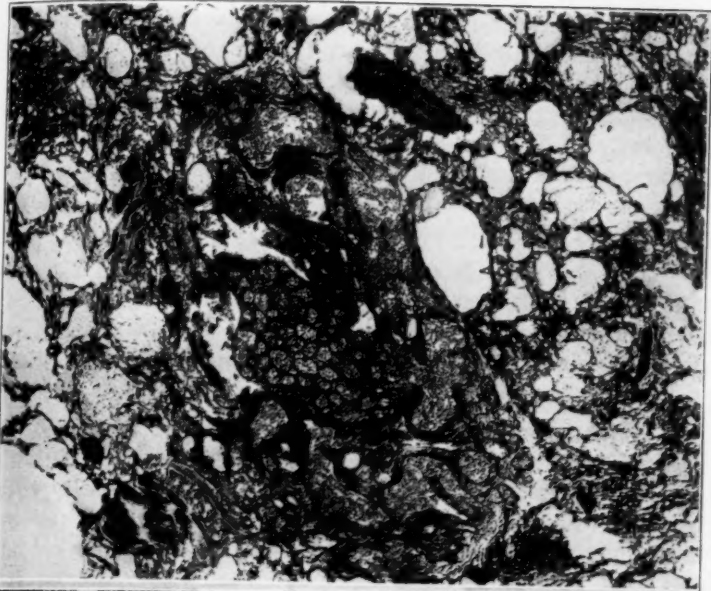


FIG. 7 (above). Tissue from a lactating udder.  
 FIG. 8 (below). Portion of intestinal wall with its accompanying  
 gland tissue.

In figure 6, the gland structure is unquestionably recognized under low magnification and the type of gland also can be seen. This is, almost entirely, a mucous type gland; it is either the glossopalatine gland or sublingual. The presence of this gland and the one previously described would warrant a diagnosis of head meat. In figure 7, a portion of udder tissue from a lactating udder is shown. The alveolar type of gland can be identified readily as the only gland structure in the illustration. Note the portion of rumen below the gland structure.

3. *Miscellaneous adulterants*: As mentioned under the description of adulterants, skin, snout, ears, lungs, and occasionally heart muscle are readily identified. In figure 8, is shown a portion of intestinal wall with its accompanying gland tissue.

A low percentage of skeletal muscle tissue in a sausage sample can be recognized by a low magnification study of the slide. The presence of a large number of plant cells indicating cereals is easily noted. The occurrence of the above factors would prompt one to call the sample one of poor quality. The identification of the type of cereal is the problem and function of a chemical laboratory. No difficulty is experienced in identifying vegetable from animal tissue.



FIG. 9. Cross-sections of eleven trichina cysts.

TABLE II—Summary by years of all samples examined.

	1933						1934						1935						1936						4 YEARS	
	B	Hf	P	V	F		B	Hf	P	V	F		B	Hf	P	V	F		B	Hf	P	V	F		TOTAL	%
All samples	6	2	6	0	0		21	3	12	2	3		31	6	35	5	21		98	38	25	13	17		344	
Adulterated	2	0	1	0	0		3	2	1	0	0		11	4	8	2	9		31	15	4	2	3		98	28.5
Poor quality	2	1	3	0	0		6	0	3	1	1		5	1	3	0	2		27	5	14	2	4		80	23.3
Negative	4	2	5	0	0		18	1	11	2	3		20	2	27	3	12		67	23	21	11	14		246	71.5

Key: B = Bologna; Hf = H. C. Frankfurters; P = Pork Sausage; V = H. C. Viennas; F = Frankfurters.

The presence of trichina cysts in pork sausage or summer sausage is a factor to keep in mind. Two cases in which litigation has come about as the result of infection through the consuming of improperly prepared sausages containing living trichina larvae have occurred during the four-year period. The cases were won on the basis of adulteration of the meat product. Although only two such instances have occurred, in the experience of this laboratory, it is thought worthy of pointing out that such a condition existed. In figure 9, cross-sections of eleven trichina cysts are shown in a single microscopic field.

#### EXPLANATION OF TABLES

In table I, all samples in which animal tissue foreign to a grade I product has been identified, are placed under the heading of "adulterated." The number of samples appearing as such have been listed in the lower, right-hand corner of the column for that particular meat product. The heading of "poor quality" may appear upon a casual glance as misleading. All samples in which a large amount of vegetable material was very evident, or those with large amounts of gelatinous material, and samples in which a low percentage of skeletal muscle tissue, were recorded under the heading of "poor quality." The existence of such samples as those falling under poor quality would indicate that more work should be done toward the identification of adulterating material of this nature.

Samples in which tissue of animal origin did not appear as an adulterant were classified as negative. Those listed as poor quality were necessarily reported as negative samples.

Over the four-year period, salivary glands appear as the only adulterant 31 times. This would indicate that head meat was the most common adulterant. Udder tissue appears 20 times as the only adulterant present. Tripe and rumen appear as the only adulterants present 18 times out of the total number. In 12 instances, a combination of adulterants is noted, the nature of which can be plainly seen in the table.

Table II is a summary of the material found in table I. The fact that 28.5 per cent of the samples examined over a four-year period were definitely shown to contain adulterants which were animal in origin would indicate that the time spent in preparing and examining such specimens is worth while. Another evident fact of equal importance, if not greater than the latter, is the 23.3 per cent of the samples listed as being of poor quality. These samples are included in the number of negative samples which are recorded. It was pointed out on all reports that were made concerning such samples, that it appeared as a poor quality product, yet no adulterating substances were definitely identified.

All of the photomicrographs illustrating various adulterants were made from material submitted for the routine examination as outlined.

#### Be Kind to Animals Week

This year, April 11 to 17 will be observed as "Be Kind to Animals Week." April 11 has been designated as Humane Sunday.

## A SLOW-DRYING ANTIGEN FOR THE BRUCELLA RAPID AGGLUTINATION TEST\*

By I. FOREST HUDDLESON, *East Lansing, Mich.*

*Department of Bacteriology, Michigan State College*

Many individuals who use the rapid agglutination test in the laboratory or in the field, where rapid drying of the serum-antigen mixture often interferes with the efficacy of the test, have expressed a desire for the introduction of a factor into the test which will retard drying. Deem† was the first to demonstrate the possibilities of using a rapid antigen that would not dry rapidly after being mixed with serum. He accomplished this result by incorporating glycerin in a deeply stained antigen.

The preparation of a slow-drying antigen has been studied in this laboratory. The procedure that has been found satisfactory for the preparation of a slow-drying antigen is as follows: The antigen is prepared according to the method<sup>1</sup> previously described, up to the point of determining the proportion of bacterial cells to suspending menstruum. After adjusting the antigen so that the volume of cells is 20 per cent of the total volume of the suspending liquid, one-half of the total volume of the antigen is centrifuged again to sediment the cells completely. A quantity of the supernatant liquid equal to 20 per cent by volume of the total volume of antigen is removed from the sedimented cells and replaced by glycerin (C. P.). The two parts of antigen then are mixed thoroughly and left standing for 24 hours before determining its sensitivity to specific agglutinins according to the method<sup>1</sup> previously described.

The glycerinated antigen and undiluted serum mixtures dry slowly on the glass plate. Even after the mixture has dried completely, the agglutinated particles of antigen remain very distinct, thus enabling the operator to read the results of the tests after many days with a high degree of accuracy. The results of the tests with the glycerinated antigen are identical with those conducted with one without glycerin. Its keeping quality is unchanged.

If it is desirable to preserve the reactions on glass slides or plates for a long period of time for reference, it has been found advantageous to stain the antigen more intensely by dissolving methyl violet in hot glycerin and then adding the mixture to

\*Received for publication, December 29, 1936.

†Dr. A. W. Deem demonstrated his slow-drying Brucella antigen at the Laboratory Section of the Clinic, 73rd annual meeting of the American Veterinary Medical Association, Columbus, Ohio, August 14, 1936.



the antigen in the proper proportion. The final concentration of the dye should be 1:5,000. Tests with the heavily stained antigen should be conducted on a clear glass plate placed one inch above an opalite glass plate which is illuminated from below. The opalite plate, illuminated from below, furnishes a brilliant, diffused white light for reading the reactions. The bluish-purple clumps of bacteria stand out clearly and distinctly against the white light.

#### REFERENCE

<sup>1</sup>Huddleson, I. F.: *Brucella Infection in Man and Animals*. (The Commonwealth Fund, New York, 1934.)

### Portrait of Doctor Grange

Friends of the late Dr. E. A. A. Grange, former principal of the Ontario Veterinary College, have felt that some step should be taken to recognize his contribution to veterinary science in America and more particularly to the cause of veterinary education in Canada. With this in view, an oil portrait of Dr. Grange has been painted to be hung in the halls of the Ontario Veterinary College at Guelph.

Former students and associates of Dr. Grange who desire to share the expense of the painting are invited to contribute at least one dollar to the fund being raised for defraying the cost of the memorial. Below are given the names of those to whom subscriptions may be sent.

British Columbia: Dr. W. H. McKenzie, 739 Hastings St. W., Vancouver, B. C.

Alberta: Dr. H. C. Storey, 302 Livestock Exchange Bldg., Calgary, Alta.

Saskatchewan: Dr. M. Barker, Post Office Bldg., Regina, Sask.

Manitoba: Dr. R. H. Lay, 613 Dominion Public Bldg., Winnipeg, Man.

Ontario: Dr. W. Moynihan, 2078 Saint Clair Ave. W., Toronto, Ont.

Quebec: Dr. J. A. McLeish, 379 Common St., Montreal, Que.

Maritime Provinces: Dr. Chas. A. Mitchell, 187 Holmwood Ave., Ottawa, Ont.

United States: Dr. O. Hall, Confederation Bldg., Ottawa, Ont.

### New Lederle Catalog

Any graduate veterinarian who failed to receive a copy of the new 1937 Veterinary Catalog and Price List recently published and distributed by Lederle Laboratories, Inc., should send for a copy at once. The catalog consists of 134 pages, attractively printed and profusely illustrated. Address requests for the catalog to Veterinary Department, Lederle Laboratories, Inc., 30 Rockefeller Plaza, New York, N. Y.

## A STUDY OF BLACKLEG AND ITS COMPLICATIONS\*

By FRANK BREED, *Lincoln, Neb.*

This problem was investigated because of the number of cases of apparent failure to protect both young and adult cattle against *Clostridium chauvei* (blackleg) infection with recognized blackleg products. The diagnosis of blackleg or true *Cl. chauvei* infection from gross pathology has, on the whole, been entirely satisfactory.

The protection of young cattle against the infection with products produced from *Cl. chauvei* during the past 20 years has been outstanding. The failures, when considering the total number of animals protected with standard recognized products, have been negligible. The products which have given such satisfactory results in the field are blackleg aggressin (natural), made from the affected muscles of calves either moribund or dead of the disease; blackleg bacterin, a laboratory product consisting of the aggressive substance and devitalized organisms and spores, by the addition of formalin; blackleg aggressin (cultural), a laboratory product containing the unaltered aggressive substance from which the organisms and spores have been removed, but not by filtration. A more recent laboratory product has been produced which contains the aggressive substance in an insoluble formed precipitate.

All of the products have shown themselves to be exceedingly efficient when used in the field and when tested experimentally by virulent blackleg organisms, together with the use of non-immunized controls. Scott<sup>1</sup> stated that following immunization, the loss from blackleg (*Cl. chauvei*) infection in the field is one in 10,000. With all this information, it was difficult to explain why fairly heavy losses in certain areas where immunization against *Cl. chauvei* was carried out in a routine manner should occur.

This condition was first called to our attention more forcefully than usual in the fall of 1930, and the investigation of affected material was started. Most of this material has been sent to us by practicing veterinarians and some we have gathered in the field.

Areas from which affected material was obtained were located in Nebraska, Kansas, Wyoming, Colorado, South Dakota, Iowa

\*Presented at the twenty-second annual meeting of the Oklahoma Veterinary Medical Association, January 11-12, 1937.

and Illinois. In some of these states the areas are quite extensive, especially Nebraska and Wyoming, while in others the areas are scattered and comprise not a large number of animals.

The history is always that of typical blackleg, and on examination of the carcass, the pathological lesion of the muscle is characteristic of *Cl. chauvei* infection. The muscle is dark in color, the bundles are separated by gas, and the usual amount of dark bloody exudate and the characteristic rancid odor are present.

The microscopic examination shows the usual Gram-positive rods with the spores located centrally or occupying about one-third the organisms, giving the characteristic club shape. In these same preparations there will usually be seen Gram-positive rods which are slightly longer, a little more slender, and occasionally short chains of three to five segments.

Cultures prepared from this tissue will yield the regularly recognized *Cl. chauvei* and also the second organism which grows more rapidly, longer, and has a little more tendency to chain or appear in the filamentous form. Careful study of these two types of organism, in which Dr. J. P. Scott rendered very valuable assistance, resulted in recovering *Cl. chauvei* and *Cl. septicus*. In three instances, *Cl. novyi* also was found. The review of the literature clearly points out that there has been some confusion in the minds of various investigators relative to the importance of *Cl. septicus* in clinically diagnosed blackleg.

Graüb<sup>2</sup> found that *Cl. septicus* infections were present in a greater percentage of vaccinated cattle than among cattle not protected against *Cl. chauvei*. Weinberg and Mihailescu<sup>3</sup> examined numerous cultures and dried specimens obtained from cases of blackleg in most parts of the world. They concluded that blackleg is not caused by a single bacterial species and suggested that a polyvalent vaccine should be used. Edwards<sup>4</sup> reported that in India many cases of blackleg were due to organisms other than *Cl. chauvei*. He found that an aggressin made by using cultures from local cases of blackleg together with cultures of *Cl. chauvei* produced the best results. Bosworth,<sup>5</sup> after an exhaustive study, concluded that the etiological significance of *Cl. septicus* in blackleg of cattle had not been proved.

In continental Europe, for many years, various investigators have shown that *Cl. septicus* has played an important part in the anaerobic diseases of cattle and sheep. It was early recognized that this organism, *Cl. septicus*, in suitable media, produced a substance (designated toxin by some) which had protective properties against subsequent infection.

Certain areas in Europe and also South Africa find these two organisms so frequently in affected tissues from cattle and sheep on grazing lands, that it is necessary to protect the bovine and ovine species against their ravages, so they immunize by the use of two separate products, or by a combination of the two.

The European and South African experiences were very similar to those in the United States, particularly relative to the areas referred to formerly. There are certain large ranges or pastures in which the losses are quite severe among young and in many instances adult cattle which have been protected against *Cl. chauvei* infection by means of a recognized immunizing product.

After making investigations of material from the areas for the past six years and especially since the frequency of its occurrence seemed to be on the increase, we deemed it advisable to look into the matter of attempting to prepare a protective product to prevent losses within these areas and in newly discovered ones if they exist.

The problems of preparing the product or products for immunizing purposes were not difficult, but the difficulty from the practical standpoint was to incorporate a full immunizing dose for each type of infection in a volume of 5 cc.

In a review of the literature we discovered that J. R. Scheuber,<sup>6</sup> of South Africa, had prepared such a product and shown in a controlled test, in which there were a limited number of animals, that by this method a reliable, highly protective product could be prepared.

The method outlined by Scheuber was followed with a slight modification. First, we used smaller units; second, chopped brain is added to the liver broth; third, the growth- and aggressin-producing salts of Scott were added to the media at time of preparation. The periods of time of incubation, adjustment of pH, addition of sugars and inoculation periods are carried out the same as reported by Scheuber.

At the expiration of the incubation period, the flasks are removed and the various cultures are mixed proportionately, then formalin is added to the strength of 1 per cent final. After four days, the product is tested by culturing to prove that the organism and the spores are devitalized. Then quantities are injected subcutaneously into guinea pigs to show there is no toxic action and that the product will not produce disease.

Before such a product could be placed in the hands of the practicing veterinarians it was necessary to satisfy the U. S. Bureau of Animal Industry and ourselves that the product would

protect against lethal doses plus, of *Cl. chauvei*, *Cl. septicus*, and a combined infection of the two organisms. For this purpose we used lambs, procured from an area where it was said that *Cl. chauvei* and *Cl. septicus* infection and losses did not exist.

The animals were received on May 25, 1936, and placed in an enclosure protected against the entrance of birds. Shelter was provided from the hot sun by two buildings opening into the wire netting enclosure. Good ventilation was provided by use of screened windows and doors. After the animals had been on the premises for four days, had become accustomed to new surround-

TABLE I—Results of the test using chauvei-septicus bacterin as the commercial blackleg products as immunizing antigens, with *Cl. chauvei* cultures as infecting agents.

LAMB	IMMUNIZING PRODUCT	AMOUNT INJECTED (cc)	DATE INJECTED	INFECTING AGENT USED	AMOUNT INJECTED (cc)	DATE INJECTED	RESULTS
3	Chauvei-septicus bacterin	5.0	5-29-36	<i>Cl. chauvei</i>	2.0	6-20-36	Lived
4		5.0			2.0		Lived
9		5.0			2.0		Lived
10		5.0			2.0		Lived
11		5.0			2.0		Lived
12		5.0			2.0		Lived
16		5.0			2.0		Lived
17		5.0			2.0		Lived
18		5.0			2.0		Lived
20		5.0			2.0		Lived
21	Commercial blackleg product 1	5.0			2.0		Lived
22		5.0			2.0		Lived
23		5.0			2.0		Lived
24		5.0			2.0		Lived
25		5.0			2.0		Lived
26	Commercial blackleg product 2	5.0			2.0		Lived
27		5.0			2.0		Lived
28		5.0			2.0		Lived
29		5.0			2.0		Lived
30		5.0			2.0		Lived
31	Commercial blackleg product 3	5.0			2.0		Lived
32		5.0			2.0		Lived
33		5.0			2.0		Lived
34		5.0			2.0		Lived
35		5.0			2.0		Lived
36	Normal controls	—	—		2.0		Died. 32 hours
37		—	—		2.0		Very sick. Lived
38		—	—		2.0		Died. 44 hours
39		—	—		2.0		Died. 60 hours
40		—	—		2.0		Very sick. Lived



ings and were shown to be normal in all respects, the subcutaneous injection of 5 cc of the chauvei-septicus bacterin to 20 animals was carried out on May 29, 1936. At the same time that the chauvei-septicus bacterin was administered, three recognized commercial blackleg products prepared from cultures of *Cl. chauvei* were administered to 15 additional lambs, five in each group. On June 15, two lambs were used to determine that our inoculating cultures were pathogenic.

Lamb 49 received in the muscle of the thighs, 1.5 cc of *Cl. chauvei*, and lamb 50 received in the muscles of the thigh, 0.5 cc of *Cl. septicus*. These lambs sickened and died with characteristic lesions in 32 hours and 25 hours, respectively. Suitable material recovered under fairly aseptic conditions was cultured in the laboratory and the respective organisms recovered and identified.

As table I shows, the new product, chauvei-septicus bacterin, protected 100 per cent of the lambs against the infective dose of the *Cl. chauvei* virus, while the controls showed a mortality of 60 per cent, with the two other lambs becoming very sick, and later being destroyed to relieve their suffering. This table also shows that three commercial products also protected 100 per cent of the lambs against the infective dose of *Cl. chauvei*.

TABLE II—Results of the test using chauvei-septicus bacterin as the immunizing antigen, with *Cl. chauvei* and *Cl. septicus* cultures as the infecting agents.

LAMB	IMMUNIZING PRODUCT	AMOUNT INJECTED (CC)	DATE INJECTED	INFECTING AGENT USED	AMOUNT INJECTED (CC)	DATE INJECTED	RESULTS
1	Chauvei-septicus bacterin	5.0	5-29-36	* <i>Cl. chauvei</i> and <i>Cl. septicus</i>	1.0	7-4-36	Lived
2		5.0					Lived
5		5.0					Lived
6		5.0					Died. 27 hours
7		5.0					Lived
8		5.0					Lived
13		5.0					Lived
14		5.0					Lived
15		5.0					Lived
19		5.0					Lived
41	Normal controls	—	—		1.0		Died. 29 hours
42		—	—		1.0		Very sick. Lived
43		—	—		1.0		Died. 23 hours
44		—	—		1.0		Died. 28 hours
45		—	—		1.0		Very sick. Lived

\*Not given a virus. Became infected with blowworms. Died.

The analysis of table II shows that eight of the nine (88.8 per cent) immunized animals exposed to the combined infection (*Cl. chauvei* and *Cl. septicus*) were protected. Why the one animal (lamb 6) died as promptly as the controls, we cannot explain. The normal controls showed a 60 per cent mortality, with two living but exceedingly sick. The results of this test show that the two antigens contained in the chauvei-septicus bacterin will immunize simultaneously and give satisfactory protection against an infection of the two pathogens when administered simultaneously.

TABLE III—Results of retesting the animals of the first group (table I) for protection against *Cl. septicus* after a severe exposure to *Cl. chauvei*.

LAMB	IMMUNIZING PRODUCT	AMOUNT INJECTED (cc)	DATE INJECTED	INJECTING AGENT USED	AMOUNT INJECTED (cc)	DATE INJECTED	RESULTS
3		5.0			0.5		Lived
4		5.0			0.5		Died. 102 hours. No lesions. Death due to heat?
9	Chauvei-septicus bacterin	5.0	5-29-36	<i>Cl. septicus</i>	0.5	7-4-36	Lived
10		5.0			0.5		Died. 80 hours
11		5.0			0.5		Lived
12		5.0			0.5		Lived
16		5.0			0.5		Lived
17		5.0			0.5		Died. 44 hours
18		5.0			0.5		Lived
20		5.0			0.5		Died. 40 hours
26	Commercial blackleg product 2	5.0			0.5		Very sick. Lived
27		5.0			0.5		Died. 72 hours
28		5.0			0.5		Died. 36 hours
29		5.0			0.5		Died. 40 hours
30		5.0			0.5		Died. 72 hours
46	Normal	—	—		0.5		Died. 36 hours
47	controls	—	—		0.5		Died. 44 hours

It is shown in table III that, of the ten immunized animals, four died. Three of these showed typical lesions of the infecting organism and died within the usual period. Lamb 4 showed no evidence of sickness and no local lesion and did not die until the 102nd hour. This death was attributed to excessive heat and not the infecting organism. This shows a 70 per cent protection, while in the group immunized with a product prepared from cultures *Cl. chauvei* only, the mortality was 80 per cent and in the two normal controls the mortality was 100 per cent.

## DISCUSSION

The result of our investigation of blackleg, or possibly atypical blackleg, shows that more than the organism *Cl. chauvei*, in frequent instances, is involved in the field-diagnosed cases. The organisms most frequently involved with *Cl. chauvei* is *Cl. septicus*, although *Cl. novyi* has been found in a few instances. The proper preparation of a laboratory product using these two organisms results in a product which is capable of protecting susceptible lambs against subsequent infection in a very high percentage.

During the past year, about 2,500 doses of the chauvei-septicus bacterin have been used experimentally in the field in the immunization of young cattle, in the aforementioned areas, with the most gratifying results. There are certain pastures it was found necessary to abandon due to loss of young cattle, because they could not be protected against the infection existing there. In these instances we have, during the past year, grazed young animals, immunized with the chauvei-septicus bacterin, in these highly infected pastures, without a loss to date. We appreciate the fact that no controls were exposed in these pastures, but if we may take the experiences of these owners over a number of preceding years, we can rightly feel that the favorable results were due to the efficiency of the chauvei-septicus bacterin.

## CONCLUSIONS

1. *Cl. chauvei* is the true cause of uncomplicated blackleg.
2. Blackleg, as it occurs in the field in cattle and sheep, may be caused by the organism *Cl. chauvei*, or this organism combined with *Cl. septicus*, and in a few instances with *Cl. novyi*.
3. From the clinical symptoms manifest and the gross lesions produced it is impossible to distinguish between those produced by *Cl. chauvei* and those complicated with *Cl. septicus*.
4. The microscopic examination of affected material of unknown origin is not a reliable means of diagnosing *Cl. chauvei* infection. Further laboratory procedures should be used to prove the type of infection or infections.
5. The recognized blackleg products marketed by commercial institutions having adequate and reliable scientific staffs will provide a high grade of protection against direct exposures to the organism *Cl. chauvei*.
6. Efficient products prepared from *Cl. chauvei* will not give adequate protection to infections of *Cl. septicus* or *Cl. septicus* combined with *Cl. chauvei*.

7. Lambs are susceptible to infections of the *Cl. chauvei* and *Cl. septicus* on direct exposure and are suitable animals for testing the efficiency of *Cl. chauvei* and *Cl. septicus* immunizing products.

8. A product prepared in accordance with the method outlined by Scheuber, or this same method with slight modifications as outlined, will yield a product which will give adequate protection to lambs and probably calves.

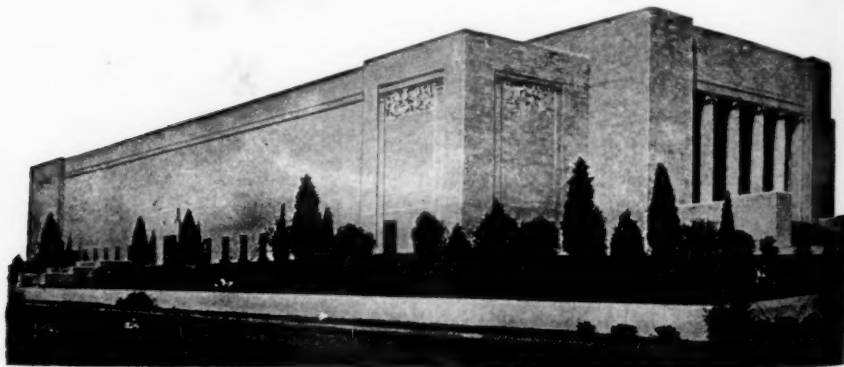
9. That the 5-cc dose of chauvei-septicus bacterin contains sufficient active principals to protect lambs against a lethal-plus dose of *Cl. chauvei*, *Cl. septicus* and a mixture of the two organisms.

#### ACKNOWLEDGMENT

The writer is very grateful to Dr. L. Van Es, who has so kindly offered constructive criticism in planning this experiment; to Dr. J. P. Scott, for assistance in literary references and other helpful suggestions in the preparation of the experimental product; and to Dr. J. P. Guffy and Dr. H. D. Port, for their splendid coöperation in the field trials.

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# CLINICAL AND CASE REPORTS



## SUBMAXILLARY ABSCESS OF FOREIGN BODY ORIGIN IN A DOG\*

By H. D. PRITCHETT, *Philadelphia, Pa.*

In general practice it is not uncommon to see some variety of enlargement appearing at any point on the body of a patient. All such enlargements obviously do not require surgical intervention, nor are they always justifiable cause for alarm, either to the client or to the attending veterinarian. However, these abnormal conditions should be thoroughly examined to determine their nature and, on consistent diagnosis, appropriate treatment should be instituted at once.

In many such cases surgical treatment would be entirely inappropriate, but when clinical observations and history reveal the sudden occurrence of swelling with heat, fluctuation, perhaps drainage and great pain, it is difficult to understand how this syndrome could masquerade under any title other than "abscess." It is believed that a study of the following case report will justify this statement.

*History:* A female collie, age 10 months, was presented to the writer for treatment, with the following information from the owner: A swelling had appeared suddenly under the jaw about six weeks previously; it became very large, opened, and drained. Two weeks before the swelling was first noticed, the dog refused to permit the application of a collar or harness. She was taken to a veterinarian but the client was advised that no treatment, other than the local application of a blue liquid preparation (which was dispensed), would be necessary. The swelling further increased in size, and the dog often cried out suddenly with pain. By this time she could not be handled or lifted from the floor without causing extreme suffering. Needless to say, the dog had become vicious and resentful.

*Diagnosis:* The dog was examined under ether, anesthesia being accomplished with considerable difficulty. (Any other

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method of anesthesia would have been equally difficult with this patient, due to her aversion to being handled because of the resultant pain.) The swelling was situated between the rami of the mandible, and slightly to the right side, just posterior to the pharynx. In size, it was that of a hen's egg, and oval in outline; it was surrounded by an indurated field of about one inch, and a very thick capsule could be palpated, which indicated the chronicity of the condition. Also present was a pin-point opening, through which pus could be expressed upon the application of pressure. With due consideration of the history, a diagnosis of chronic submaxillary abscess was therefore in accordance with the clinical findings.

*Operation:* The anesthesia was maintained, and the area shaved and prepared according to modern aseptic methods. (While this may have been a needless procedure, such routine is not wisely neglected, especially in canine practice.) A deep 2-inch antero-posterior incision was made parallel to and on the right side of the median line, directly across the point of the abscess. Very free primary drainage was immediately established. The contents of the abscess were of a heavy, creamy consistency, and about 2 tablespoonfuls in quantity.

When the incision was made a metallic object was struck with the scalpel, which, on removal, proved to be a 1½-inch ordinary sewing needle, threaded with black cotton. The greater portion of the 32 inches of thread was carefully wound around the needle, leaving only 12 inches free. The entire needle, excepting a very small portion which was protected by the tightly wound thread, was corroded but not rusty. There were no wounds or points of drainage within the oral cavity; neither was there a fistulous tract behind the needle or thread by which its direction of movement or entrance could be traced.

Much of the proliferation was excised; the cavity was curetted free of all tissue debris, packed with 24 inches of gauze moistened with Lugol's solution, and a continuous retention suture inserted. A dry dressing was then applied, and the dog permitted to recover from the anesthesia. On the second day following the operation, the packing was removed without disturbing the retention sutures. The gauze was saturated with blood but no pus was evident, and sloughing was not in excess of that desired. The cavity was swabbed with Lugol's solution, repacked with dry gauze, and for protection a dry dressing applied.

On the third day, the packing and the retention sutures were removed. There was some serum present, but no blood or pus.

The proliferation had softened considerably and granulation was quite evident. The cavity and surrounding area were treated with tincture of metaphen, and a pressure dressing applied to obliterate the cavity. This procedure was repeated on the fourth and fifth days, and by the sixth day the cavity was entirely closed, with no retention of fluid. Secondary drainage was not required at any time.

When again observed on the twelfth day, all that remained to complete the healing process was a dry scab centered on what had been the point of the abscess. The remainder of the line of incision was completely healed, appearing like that of first intention, as there was no extensive formation of scar-tissue to replace the limited tissue destruction. Of course, the induration is expected to remain for an indefinite period.

### DIOCTOPHYME RENALE IN MINK\*

By EARL F. GRAVES, *Poynette, Wis.*

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The subject was a male mink, one year old. No symptoms had been observed by the care-taker. The animal had eaten well and was in good flesh, when found dead in its nest-box one morning. This animal was pen-bred, whelped and reared, and had never been off the ranch.

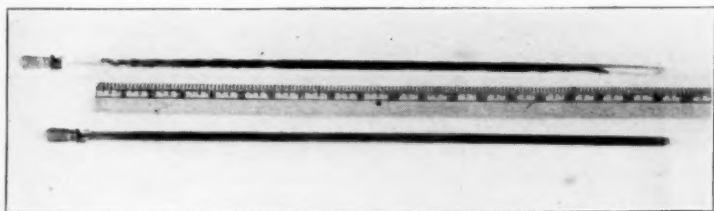


FIG. 1. *Dioctophyme renale* from a mink.

Autopsy showed the animal to be perfectly normal throughout, except for a greatly enlarged right kidney. It was easy to see that there was only the capsule remaining. There were bulges in it that were soft on palpation. Upon opening the capsule, two long blood-red specimens of *Dioctophyme renale* rolled out. As can be seen in the illustration (fig. 1) one was  $17\frac{1}{2}$  inches long and the other slightly over 19 inches, a male and female.

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This is the second case of this nature that has come to my notice. The first case was also a mink and there were two worms.

### FREQUENCY OF MASTITIS BY QUARTERS\*

By F. B. HADLEY, *Madison, Wis.*

*Department of Veterinary Science, University of Wisconsin*

During the past year, a study was made of 400 udder quarters showing well-marked evidence of mastitis to determine which of the four quarters is most frequently involved. It was found that the two rear quarters were more often affected with mastitis than the two front quarters; but that there was no significant difference in occurrence of the disease between the right and the left halves of the udder. Furthermore, when the two front quarters were compared with each other and the two rear quarters were similarly compared, only a little difference was noted (table I). Of these 400 quarters in which mastitis was known to be present, 153 (38 per cent) were located in the front quarters and 247 (62 per cent) in the rear quarters. The right front quarter was affected in 74 (19 per cent) of these 400 quarters, while the left front quarter was involved in 79 (20 per cent). The right rear quarter was involved in 122 (30 per cent) of the cases and the left rear quarter in 125 (31 per cent).

TABLE I—*Frequency of mastitis by quarters.*

400 MASTITIS QUARTERS			
153 FRONT (38.25%)		247 REAR (61.75%)	
RIGHT	LEFT	RIGHT	LEFT
74 (18.5%)	79 (19.75%)	122 (30.5%)	125 (31.25%)

The following reasons are suggested as having a bearing on these results: (1) The rear quarters, on account of being in closer proximity to the filth of the gutter, are more subject to contamination; (2) the rear quarters are usually of greater size, so are apt to be more pendulant and thus likely to become injured when the cow steps over high door-sills and passes over

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rough ground; (3) the location of the rear quarters between the thighs subjects them to greater pressure when the cow walks or lies down, which results in more disturbance to the circulation of the blood; (4) the rear quarters produce 60 per cent of the milk, so are more active functionally, thus rendering them more susceptible to infection; (5) the rear quarters are more likely to be injured from behind than are the fore quarters from the front.

## STRICTURE OF RECTUM OF A DOG: METHOD FOR SURGICAL TREATMENT\*

By CARL F. SCHLOTTHAUER and LEONARD K. STALKER

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Stricture or stenosis of the intestine sufficient to cause symptoms of obstruction is infrequently observed in animals. Hutyra and Marek<sup>1</sup> mentioned its occurrence in horses, cattle, swine and dogs, but stated that it was a "rare affection." One of us (Schlotthauer<sup>2</sup>) has observed the condition in three animals: in a Holstein cow and in two Boston terrier dogs. The cow had annular stenosis with incomplete obstruction of the rectum; the stricture, which was approximately 15 cm from the anus, had followed an operation for rectal prolapse.

The first instance of stenosis of the intestine observed by us in a dog was probably the result of an automobile accident. The stricture had caused complete obstruction of the ileum. This portion of the bowel was resected and an end-to-end anastomosis was made, but the animal died subsequent to the operation. In the other dog, whose case we are reporting in this paper, the rectal stricture was treated successfully by surgical means.

Intestinal stricture or stenosis may result from the contraction of scar tissue, caused by injury or inflammation in the intestinal wall or tissues immediately around it, or a neoplasm may occasionally be responsible for it. It may therefore be stated that the etiology of intestinal stricture is traumatic, infectious or neoplastic.

The intestinal tract of the dog is subject to trauma both from without and within. It is frequently traumatized in automobile accidents or in fights. If the intestine itself is uninjured, the tissue surrounding it may be badly traumatized, be-

\*Received for publication, February 6, 1937.

come adherent to the wall of the bowel and secondarily cause stricture. Laceration and puncture of the rectum of dogs by ingested bones and foreign bodies are not uncommon. Dollar<sup>3</sup> mentioned that occlusion of the rectum may occur in both pigs and dogs following chronic diarrhea. Abscesses and chronic infectious lesions affecting the wall of the intestine or extensive ulceration of the mucosa due to chemical irritants or abrasive substances may cause marked scarring and stenosis of the intestine. Neoplasms cause intestinal obstruction by invading the bowel and by compression.

Methods of treating stenosis of the intestine depend chiefly on the general condition of the animal and on the location, type and completeness of the stricture. When obstruction is incomplete and severe symptoms are not manifested, some authors recommend the use of frequent mild laxatives and a low residue diet. Dollar stated that when cicatricial stricture of the anus or posterior portion of the rectum is present, it may be temporarily relieved by forcible dilatation. He mentioned that the use of bougies, as used in the treatment of rectal stricture in man, is in animals attended with difficulty and suggested forcible dilatation of rectal strictures with forceps. Hutyra and Marek stated that one should attempt to cut or tear the adhesive bands when the stenosis is surgically accessible. We believe that the surgical procedure employed by us in the case which we are reporting is an improvement over other methods of surgical treatment and could be used in any case in which the stricture is accessible.

#### REPORT OF A CASE

On June 16, 1936, an adult female Boston terrier was brought to one of us (Schotthauer) for treatment. She had apparently been well and in good health until about five weeks previously, when it was observed that she was experiencing difficulty in defecating. Her attempts at defecating had increased in frequency and then become almost constant; after a long interval of straining, she would pass small bits of fecal matter. It was observed that a short segment of the rectum was prolapsed during each attempt to defecate. She was still in fair flesh, but it was stated that she was losing weight.

Digital examination of the rectum revealed a firm annular stricture approximately 8 cm from the anus. The lumen through the stenosis, which was of considerable length, dilated to a diameter of about 1 cm. The animal was anesthetized with ether, and gentle forcible dilation beyond this diameter was attempted but



was unsuccessful. We therefore decided to perform an exploratory laparotomy and if possible treat the stricture surgically.

The abdomen was opened through a midline incision extending from the umbilicus to the brim of the pubis. A tunnel stricture of the rectum was found. It was located in the upper portion of the rectum at its junction with the descending colon. The stricture was in the relatively fixed portion of the rectum and was approximately 4 cm in length. There was considerable scarring and thickening of this portion of the bowel and a fair amount of subsiding perirectal inflammation. The location of the stricture, the fixation of the bowel, and the shortness of the segment of rectum distal to the stenosis would have made it exceedingly difficult to resect the strictured bowel and to perform an end-to-end anastomosis. Since colostomy would have been impractical, it was decided to perform a plastic operation similar in detail to the pyloroplasty of Heineke and Mikulicz which is used in man to treat certain lesions of the duodenum and pylorus.

The rectum below the stricture had been cleaned previously by warm water irrigations. The contents of the bowel above the stenosis were gently milked to a point several centimeters above the stricture and a soft rubber clamp was placed over the bowel to prevent the contents from spilling. Satisfactory exposure was obtained by the use of a self-retaining retractor and by packing the bowel into the upper part of the abdomen. Packs were carefully placed around the strictured rectum so that the only bowel exposed was the stenosed portion and the 10 cm above and about 5 cm below it. The dense fibrous tissue surrounding this region was divided and the rectal wall was exposed. The

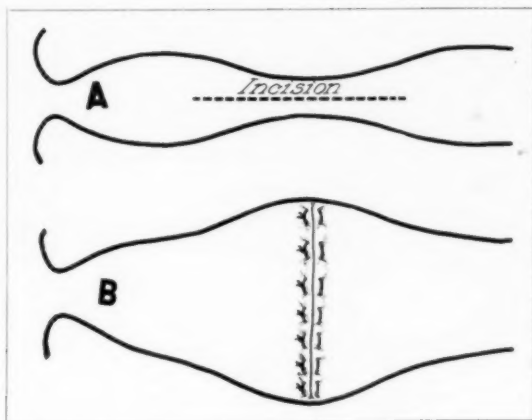


FIG. 1. A, site and direction of the incision; B, incision spread laterally and sutured transversally.

stricture was divided longitudinally into the intestinal lumen, the incision extending 3 cm or more into healthy bowel above and below the stenosis (fig. 1A). Allis forceps were then placed on each side of the middle of the longitudinal incision, gentle lateral traction was made, and the rectum was drawn open in its transverse diameter. The incision in the rectum was closed transversely by a double row of continuous chromic catgut sutures, and this was reinforced by a third row of interrupted catgut sutures (fig. 1B). This gave a lumen which easily admitted the tips of two fingers. The abdominal incision was closed in the usual manner and the dog was confined in a cage.

Postoperatively the dog was given nothing by mouth for the first 24 hours, and then was given liquids, chiefly water and milk, for the following four days. A gradually increasing quantity of meat and cereal food was fed after the fifth day. Some inflammation and edema developed at the operative site in the rectum, but this gradually subsided in three to four weeks.

Since this time, the dog has appeared normal and has gained weight. Bowel movements have been normal in every respect. At the present time (seven months since the operation) the dog is in good health and has had no recurrence of the previous symptoms.

#### COMMENT AND SUMMARY

The cause of the stricture in this case is unknown, but from its situation, progressive course and the nature of the lesion, it was thought to have been traumatic. The animal probably had suffered puncture or laceration of the rectum at an earlier time.

The treatment of intestinal stricture in the dog is similar to that of stricture in man, and the choice of treatment must depend largely on the situation of the stricture. In many instances the stricture will require no treatment, whereas in others the frequent use of dilators is all that may be required. Colostomy is used in some cases in man, but is hardly applicable to the dog. Resection of the strictured portion can be carried out when the bowel can be easily mobilized. In other suitable cases the method which we have described is to be advocated.

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# REVIEWS



TRATADO DE DOENÇAS DAS AVES (Treatise on the Diseases of Birds). J. Reis, Chief of Service, and P. Nobrega, Assistant, with the collaboration of A. S. Reis, Section of Avian Pathology, Biological Institute, São Paulo, Brazil. 469 pages, with 359 illustrations and 4 colored plates. Instituto Biologico, São Paulo, Brazil, 1936.

In 1932, there appeared a small book (*Molestias das Aves Domesticas*) by Reis. Although intended for the practical poultry-keeper, the book nevertheless contained a wealth of information by virtue of the author's evident familiarity with the up-to-date literature on poultry diseases. This feature alone clearly set the book apart from other so-called practical treatises on the subject. Anyone reading this book could hardly evade the feeling that the author should be given the freedom to write a book on the same subject in a manner that would permit a real expression of his knowledge and experience.

Thus, in a short space of four years, Reis and his coworkers, have produced a book on poultry diseases which is certainly the best yet to appear in any language. In order that the book might enjoy the popularity that it deserves it is hoped that an English translation will be made. Such a translation would give students in North American veterinary colleges a standard, up-to-date textbook that has long been needed. Many practicing veterinarians have not had the advantage of a course in poultry diseases and such a translation would serve their needs admirably. In the meantime, the specialist in poultry diseases will be well repaid for his efforts if he acquires a reading knowledge of Portuguese.

Space will not permit an adequate review of this book. Some idea of its completeness may be gained from the fact that over 4,000 references to the literature are cited. The 359 figures include excellent illustrations of gross and microscopic pathology, parasites and life cycles of parasites. There are also graphs showing the seasonal distribution of various diseases. The alphabetical index is unusually extensive.

Virus, bacterial, mycotic and protozoan diseases are discussed in the order named. The various worms are discussed as tre-

matodes, cestodes, nematodes and acanthocephalids, with the treatments, prevention and diagnosis of each. A discussion of arthropods constitutes another part. Nutritional diseases are discussed in their order and finally miscellaneous pathological alterations are discussed with respect to the various systems. Thus, the arrangement of the text follows a natural classification.

A list of the diseases in the virus group indicates the completeness of the book. Here, fowl plague, fowl-pox, laryngotracheitis, psittacosis, rabies, pseudo-rabies, equine pernicious anemia, foot-and-mouth disease, neurolymphomatosis, leukosis, the disease of Adler and Macfie, and finally transmissible tumors are discussed. Thus, the authors do not confine themselves to diseases of fowls alone but include diseases of birds that are transmissible to man and other animals as well as diseases of mammals that may be experimentally transmitted to birds. The authors discuss Newcastle disease, Ranikhet, and the pseudo-pest of the East Indies, Egypt and Palestine separately but as varieties of fowl plague. This is perhaps as it should be since there is still some disagreement as to whether these diseases are identical with plague or not. Unfortunately, the infectious purulent entero-proventriculitis of Kaupp is included as a variety of pest, but this is a pardonable error.

A list of the headings under which fowl plague is discussed will give an idea of the organization of the material since every disease is handled in a similar fashion. There is first the name of the disease as well as the French, German, English and Spanish names and synonyms. Following this there is a short historical discussion, an indication of the geographic distribution and frequency of the infection, and naturally susceptible species. Under the caption of etiology there is discussed the filtrability, size of the virus, adsorption and electrophoresis, resistance, cultivation, distribution in various organs and nature of the virus. The virulence of the virus for various naturally susceptible and refractory species is discussed under pathogenesis. The symptoms and postmortem findings are discussed under separate headings. The inclusion bodies come in for discussion under the heading of cellular alterations. Experimental infection of the fowl, turkey, duck, goose and pigeon, as well as refractory species, is discussed in detail. Sources of infection and spread of the disease are discussed under a heading that also gives consideration of experiments on insect vectors. Under immunity there is discussed serum therapy, vaccination with heated blood, treated organ emulsions and sero-vaccination. Finally, there is a discussion of the treatment, prevention and differential diag-

nosis. Then, after a discussion of the varieties of plague already mentioned, there is a bibliography of 130 references to the literature on plague.

The classification given by Wenyon is followed in dealing with protozoan diseases. That portion dealing with *Haemoproteus* infections is discussed in detail.

The parasitic diseases are discussed in the order of their usual classification, and many more species are dealt with than one would expect to find in a work of this kind.

The authors need make no apologies for the few errors that have been committed. Infectious bronchitis, for example, is somewhat confused with laryngotracheitis, but so were they by investigators who had actual contact with these infections in the United States.

Physicians have not infrequently made valuable contributions to the field of veterinary medicine in the form of investigations of certain animal diseases which more or less had some bearing on human medicine. But here we have physicians actually engaged in poultry disease investigations and their book is a credit to their profession, a valuable contribution to veterinary medicine and a monument to the Biological Institute of São Paulo and its Director da Rocha Lima.

F. R. B.

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SAMMELBERICHT ÜBER DIE MIT MITTELN DES REICHS—UND PREUSSISCHEN MINISTERIUMS FÜR ERNÄHRUNG UND LANDWIRTSCHAFT DURCHGEFÜHRTE FORSCHUNGSARBEIT AUF DEM GEBIETE DER GEFLÜGELKRANKHEITEN. (A Collected Report on Diseases of Poultry Intended for Feeders and Farmers.) Beller and Zunker. Fritz Pfenningstorff, Berlin, 1936. Price, RM 1.50.

The Germans, since 1920, have devoted considerable time and attention to diseases of poultry and have collected excellent vital statistics and data indicating the prevalence and geographical distribution of various diseases of farm poultry. This short report gives the results of some of these investigations. Data are given in regard to the more common diseases of poultry. These include pullorum disease, coccidiosis in young birds, fowl pest, fowl cholera, avian tuberculosis, fowl-pox, fowl diphtheria, laryngotracheitis, leukemia, and neurolymphomatosis of older birds. Parasitic diseases and nutritional diseases also are discussed. The relation of diseases of poultry to those of other farm animals is briefly mentioned. The brochure ends with a short account of



the relation of poultry diseases to food supplies. (The data were compiled with the help of federal and state departments.)

C. P. F.

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**THE INTERNAL PARASITES AND PARASITIC DISEASES OF SHEEP.**  
I. Clunies Ross, D. V. Sc., Chief Parasitologist and Officer-in-Charge, and H. McL. Gordon, B. V. Sc., Research Officer, F. D. McMaster Animal Health Laboratory, University of Sydney, Australia. 238 pages, with 46 illustrations. Angus & Robertson, Ltd., Sydney, Australia, 1936. Cloth, 25 sh.

Internal parasites of sheep are the greatest single source of economic loss suffered by the sheep and wool industry. This text has been written to meet the need for a book which deals with problems involving the life history, pathogenicity, treatment for and control of the helminth parasites of sheep as they apply to the sheep industry in Australia. Among the parasites described are the common liver fluke, tapeworms, intestinal and stomach worms, lung worms and whipworms.

The authors have brought together in this text the results of their research work in Australia and have compared these results with those obtained in other countries having similar problems in the sheep industry. The methods of treatment for and control of parasites described are based upon conditions found in Australia.

This book was written to serve as a guide to the veterinarian, stock inspector and sheep-owner in Australia. The index has been arranged so that species of parasites may be readily found. The glossary explains all uncommon terms used in the text.

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**DOG ENCYCLOPEDIA.** Will Judy, Editor, Dog World Magazine. 2nd edition. 459 pages, with 375 illustrations. Judy Publishing Co., Chicago, 1936. Cloth, \$5.00.

The second edition of this book contains about four times as much reading matter as found in the first edition, published ten years earlier. It is believed to be the only strictly American textbook of its kind.

In the text, the author gives a description of each breed and the official standards for that breed. Both American and world breeds, of which there were 101 recognized by the American Kennel Club in January, 1936, are included in the book.

The book may be used by veterinarians to familiarize themselves with the breeds which are not commonly found in every

community. Veterinarians should know, as a matter of pride, the name of the breed of any dog that is presented for treatment or examination. The subject matter is so arranged that it is convenient to locate information on any breed or practically any question that would arise in connection with dogs.

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**MILK AND MILK PRODUCTS.** Clarence Henry Eckles, D. Sc., Late Chief, Willes Barnes Combs, M. A., Professor of Dairy Husbandry, and Harold Macy, Ph. D., Professor of Dairy Bacteriology, Division of Dairy Husbandry, University of Minnesota. 2nd edition. 386 pages, with 92 illustrations. McGraw-Hill Book Company, Inc., New York, 1936. Cloth, \$3.50.

The first edition of this book, published in 1929, was designed to meet the need of a general course of the greatest value to students of dairying who might later engage in farming. During the preparation of the first text, the senior author took an active part in outlining the course. Dr. Eckles died in 1933, leaving the junior authors to carry out the revision of the second edition.

The authors believed that a text-book would give more satisfactory results when a portion of the field of dairying was covered instead of attempting a survey course of the entire field. The need for a revision became apparent, due to changes and developments in the dairy industry and the advances in the knowledge of the fundamental facts concerning milk and its products.

The authors have given a history of milk and milk products. They have traced the first use of milk back to a period of more than 6,000 years ago and have shown the progress in the use and production of milk in the United States during the last century.

Veterinarians engaged in practice, as well as those conducting milk inspection, will find that the text will give them much information for their fields of work. The factors influencing the composition of milk should be fully understood. The composition of milk is influenced by the breed of the animal, the stage of lactation, seasonal changes, the intervals between milkings, the fatness of the cow, and the feed. This knowledge is very necessary if one desires to give efficient service to the dairy industry.

The discussion of microorganisms is very complete. It describes bacteria, yeasts and molds as they affect market milk. Enzymes, decomposition products, souring, aroma and flavor, fermentation and transmission of diseases are fully described. The myth of the souring of milk during thunderstorms is explained.

The veterinarian who has forgotten the details of the Babcock test may find the text very explicit in the description of testing for butter fat.

Market milk, butter-making, and the manufacture of cheese, ice cream, dry and condensed milk and lactose are described fully enough to acquaint the veterinarian with a knowledge of the up-to-date procedure in each.

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### United States Civil Service Examination

The United States Civil Service Commission announces the following open competitive examination:

#### JUNIOR VETERINARIAN

Applications for this examination must be on file with the United States Civil Service Commission at Washington, D. C., not later than the following dates:

- (a) April 12, 1937, if received from states other than those named in (b) below.
- (b) April 15, 1937, if received from the following states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

This examination is to fill vacancies in the Bureau of Animal Industry, U. S. Department of Agriculture, at a salary of \$2,000 a year, which is subject to a deduction of 3½ per cent toward a retirement annuity.

Applicants must have been graduated from a veterinary college of recognized standing, or be senior students in such an institution, and furnish proof of graduation before active duty can be assumed, even though certification has been previously given.

Competitors will be rated on veterinary anatomy, physiology and pathology, meat inspection, and theory and practice of veterinary medicine.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C.; from the secretary of the Board of U. S. Civil Service Examiners, at any first-class post office, or from any United States Civil Service district office.

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### A Cow's Nest

"That new farm hand is terribly dumb."

"How's that?"

"He found some milk bottles in the grass and insisted he had found a cow's nest."

—U. S. Coast Guard.

# ABSTRACTS



A STUDY OF IMMUNITY PRODUCED BY INFECTION WITH ATTENUATED CULTURE-STRAINS OF *HISTOMONAS MELEAGRIDIS*. E. E. Tyzzer. Jour. Comp. Path. & Therap., xlix (1936), p. 285.

Decrease in pathogenicity of various culture-strains of *Histomonas meleagridis* does not occur with uniformity. Strains which become non-pathogenic retain for a time well-marked immunizing properties when established in the ceca but may gradually lose these properties at a later date. Histological study of successive stages of the pathological process resulting from the invasion of the cecal wall by *Histomonas* has revealed qualitative as well as quantitative differences in the reaction of the chicken to different culture-strains. A comparison of the reaction of partially immunized and non-immunized chickens to pathogenic *Histomonas* shows the lesions to be microscopically similar but differing in extent. In immunized birds killed at various intervals after the test inoculation, no invasion of the tissues was demonstrated microscopically. The histological differences in the character of the reaction of partially protected chickens, as compared with those of controls, showed the following modification of infection in the former instance: (1) shortening of the course of infection, (2) the occurrence of delayed infections, and (3) marked limitations of the area of the cecal wall invaded.

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PRIMARY IRIDO-CYCLITIS IN FOWLS. A condition distinct from the eye lesions occurring in neurolymphomatosis. H. P. Bayon. Jour. Comp. Path. & Therap., xlix (1936), p. 310.

The occurrence of irido-cyclitis involving relatively large numbers of fowls, without the appearance of paralysis, before, during or after the development of any lesions, seems to suggest that irido-cyclitis is not always due to neurolymphomatosis but may occur as a separate disease. Such birds, when placed in single-pen cages where they have easy access to food and drink, will lay throughout the season while fowls with neurolymphomatosis either do not come into lay at all or cease laying the moment

the disease is manifest. There is no clear-cut difference between the anatomical lesions in the eyes of birds with irido-cyclitis when compared with those in the eye affection occurring in fowl paralysis, yet the different occurrence and course of the two ailments may be allowed to suggest a distinction in pathology. The author mentions the advisability of cautiously treating "pearly eye" in breeding birds, since it is not always possible to distinguish harmless "pale eyes" from early yet dangerous pathological lesions.

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RESULTS OF PASSAGE OF HUMAN AND MONKEY STRAINS OF *BRUCELLA MELITENSIS* THROUGH PREGNANT HEIFERS. D. E. Wilson and S. A. Evans. Jour. Comp. Path. & Therap., lxi (1936), p. 336.

A case of apparent mutation of *Brucella melitensis* to *Brucella abortus* by passage through a pregnant heifer is reported. Subsequent attempts to repeat this mutation failed. It is possible that the heifer used in the original experiment carried a latent abortus infection and that agglutination tests failed to reveal its presence. In this case the fate of *Br. melitensis* which was instilled into the conjunctival sac remains unsolved. Mixed infection of *Br. abortus* and *Br. melitensis* in the fetal tissues was not apparent.

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THE VALUE OF VACCINATION WITH LIVE CULTURES OF *BRUCELLA ABORTUS* FOR THE PREVENTION OF ABORTION. Jour. Comp. Path. & Therap., xlix (1936), p. 350.

Vaccination of 224 adult animals with live-culture vaccine of *Brucella abortus* increased the number of full-term calves by 6.32 per cent, decreased abortions by 4.32 per cent and decreased the retention of placenta by 2.59 per cent. The differences are considered so small that records over a longer period may alter them. Vaccination of 83 maiden heifers with live-culture vaccine of *Br. abortus* resulted in many abortions and sterile animals as compared with controls. The sterility was attributed solely to the vaccine. Using a large number of adult animals over a period of time, the data on full-term calves, abortions and retained placenta are not impressively in favor of vaccination but there seems to be a decided advantage as regards barrenness, sterility, deaths and discards. It is thought in this connection that there is some factor which still remains unknown. The vaccination of



cattle has been discontinued and efforts to control the disease are being made by the disinfection of maternity boxes and all animals after calving.

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THE ISOLATION OF *BRUCELLA ABORTUS* FROM THE MILK OF COWS WITH NEGATIVE BLOOD REACTIONS TO THE AGGLUTINATION TEST. T. M. Doyle and Frederick Beckett. Jour. Comp. Path. & Therap., xlix (1936), p. 320.

Milk samples from 309 non-reacting cows in 17 *Brucella abortus* infected herds have been examined by guinea pig inoculation for the presence of the organism. *Br. abortus* was isolated from the milk of two cows which had negative blood titres in dilutions of from 1:25 to 1:200. Six hundred and eighty-four cows from 17 commercial dairy herds situated in South England were tested for the presence of *Brucella* agglutinins and the average herd infection was found to be about 35 per cent.

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STUDIES ON INFLAMMATION. VIII. Carbohydrate metabolism local acidosis and the cytological picture in inflammation. Valy Menkin and Charlotte R. Warner. Amer. Jour. Path., xiii (1937), p. 25.

With the development of an acute inflammatory reaction, the carbon dioxide capacity of the cell-free exudate progressively diminishes. This is correlated with an increase in the hydrogen concentration and by a concomitant shift in the cellular composition from a polymorphonuclear to a mononuclear phagocytic phase. When the pH drops below 6.7 or 6.5, most of the leukocytes appear to be injured and frank suppuration ensues. An inflammatory exudate manifests greater glycolytic activity than blood as indicated by the higher level of exudate lactic acid and a correspondingly lower concentration of exudate sugar. The rate of glycolysis increases as the inflammatory reaction progresses in intensity within several days, particularly if the reaction has been intensified by reinoculating the irritant, the concentration of lactic acid is considerably augmented and the result is a localized lactic acid acidosis.

The evidences indicate that the mechanism of local acidosis in inflammation is therefore primarily referable to an increase in the rate of glycolysis and a consequent depletion of the alkali reserve. With the increase in the hydrogen-ion concentration to a pH below 7.0, polymorphonuclear leukocytes seem unable to sur-

vive and the predominating infiltrating cell is the mononuclear phagocyte. A maintenance of an alkali pH resulting from relatively low glycolytic activity is accompanied by a preponderance of polymorphonuclear leukocytes, with no subsequent shift in the cellular constituents of the exudate. The available evidence indicates that the cytological picture in an area of acute inflammation appears to be conditioned by the local pH which in turn depends upon the rate of glycolysis and the depletion of alkali reserve. The significance and implications of local disturbances in carbohydrate metabolism in determining the severity of an acutely inflamed area are discussed.

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**HISTOLOGICAL OBSERVATIONS ON TRANSPLANTABLE RAT AND RABBIT TUMORS CULTIVATED IN THE CHORIO-ALLANTOIC MEMBRANE OF CHICK EMBRYOS WITH SPECIAL REFERENCE TO THE WALKER RAT TUMOR 256.** Robert Schrek and Roy C. Avery. *Amer. Jour. Path.*, xiii (1937), p. 45.

The chorio-allantoic membrane of the chick embryo was found to be a suitable medium for the growth of the Walker rat tumor 256, the R 39 rat sarcoma and the Brown-Pearce carcinoma. The R 39 sarcoma and the Brown-Pearce carcinoma obtained from chick membranes were similar microscopically to the parent tumors obtained from the rat and rabbit. In contrast, all the Walker tumors obtained from the chick membranes differed notably in histological structure from the parent spindle cell tumors obtained from the rat. This change in structure was interpreted as a partial reversion of the Walker tumor to its original carcinomatous structure.

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**EXPERIMENTAL RENAL LESIONS AND BLOOD PRESSURE IN RABBITS.** R. W. Scarff and Murray McGeorge. *Brit. Jour. Exp. Path.*, xviii (1937), p. 59.

The blood-pressure readings were taken in rabbits after various forms of renal injury, which included oxalate nephritis, unilateral and bilateral nephrectomy, trauma, ligation of ureters, and glomerular embolism, both by inert material and by killed bacteria in sensitized animals. In many of the animals considerable impairment in the renal function was indicated by an increase in the blood urea, but in none of them was there found any significant rise in the blood pressure.

AN ANALYSIS OF MITOSIS IN LIVER RESTORATION. Austin M. Brues and Beula B. Marble. *Jour. Exp. Med.*, lxxv (1937), p. 15.

Following partial hepatectomy in the rat, there is a latent period of one day during which the rapidly growing organ shows no increase in cell number. Mitosis then begins rapidly, following a brief premitotic period of visible nuclear changes. The duration of each mitosis is then calculated to be about 49 minutes. The percentage of cells in mitosis in a single hypertrophying liver varies widely from hour to hour, so that a single mitosis count does not give the accurate growth rate. The fluctuations occur at different times in different livers. No great number of mitoses begin and end simultaneously. Mitoses are evenly distributed throughout the liver and throughout each lobule. There is no preponderance near the bile-ducts. The mean initial mitosis rate is very similar to that in early embryo, heart and tissue cultures of mesenchyme. The rapid rate occurs without signs of cell differentiation.

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THE EFFECTS OF GONADOTROPIC HORMONE IN THE TREATMENT OF EXPERIMENTAL TUBERCULOSIS. M. Maxim Steinbach and Sidney J. Klein. *Jour. Exp. Med.*, lxxv (1937), p. 205.

Experimental tuberculosis in rabbits and guinea pigs was favorably influenced by the administration of antuitrin S.; pregnant mare serum which is rich in gonadotropic hormone also proved very efficacious in retarding tuberculosis. Anterior pituitary extract containing growth, sex and thyrotropic principles proved of no value in retarding the progress of the disease. Placental extract given by mouth was likewise entirely ineffective in preventing progress in the treated animal and in the control. The mechanism whereby the gonadotropic hormone influences tuberculosis remains to be determined.

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IMMUNIZATION OF RABBITS TO INFECTIOUS PAPILLOMATOSIS. Richard E. Shope. *Jour. Exp. Med.*, lxxv (1937), p. 219.

Multiple intraperitoneal injections of either infectious or non-infectious glycerolated rabbit papilloma suspensions immunized domestic and cottontail rabbits to papillomatosis. The capacity of the non-infectious suspensions to immunize is considered evidence that they contain papilloma virus even though none can be demonstrated by the usual infection test. The immunity was achieved without detectable infection of tissues in which the

virus causes lesions. Antibodies capable of neutralizing the virus were demonstrable in the sera of vaccinated animals.

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INHERITANCE OF RESISTANCE OF MICE TO ENTERIC BACTERIAL AND NEUROTROPIC VIRUS INFECTIONS. Leslie T. Webster. Jour. Exp. Med., lxxv (1937), p. 261.

Under the conditions specified, there may be selected promptly from a hybrid stock of mice, of which 40 to 50 per cent die following a standard dose of *B. enteritidis* or Saint Louis encephalitis virus, lines in which as high as 95 per cent and as low as 15 per cent succumb. Three lines, one bacteria-susceptible-virus-susceptible, one bacteria-susceptible-virus-resistant and one bacteria-resistant-virus-susceptible, are regarded as remaining relatively stable after approximately twelve generations of selection and brother-to-sister or line inbreeding. Crossing susceptible with resistant lines resulted in mortality percentages in the neighborhood of those expected, on the basis that resistance to *B. enteritidis* and to encephalitis virus is each inherited independently on a single factor basis with resistance dominant over susceptibility.

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THE RAPID INVASION OF THE BODY THROUGH THE OLFACTORY MUCOSA. Geoffrey Rake. Jour. Exp. Med., lxxv (1937), p. 303.

Prussian blue particles pass rapidly from the surface of the olfactory mucosa of the mouse and within two minutes are found in the tissue spaces, in blood, lymph-vessels, in the perineural spaces of the olfactory nerve fibers and in the subarachnoid space and pia arachnoid membrane. There is a great affinity of pigment particles for the olfactory sensory cells. Preliminary treatment of the olfactory mucosa with tannic acid does not alter the speed with which this absorption occurs. It does, however, cause an inflammation of the mucosa and appears to prevent the pigment from entering the olfactory sensory cells. Both pneumococci and *S. enteritidis* pass through the olfactory mucosa and reach the tissue spaces, the vessels and the subarachnoid space with the same rapidity as the pigment. They invade by passage between the cells of the mucosa and there is no apparent affinity of the organisms for the olfactory sensory cells. Tannic acid treatment of the olfactory mucosa in no way alters the invasion of organisms through the mucosa. The pantropic virus, equine encephalomyelitis, was detected in the fore brain as promptly as were pigment and bacteria, neurotropic viruses, however, Saint Louis encephalitis, rabies and louping-ill were not demonstrated in less than 24 hours.



### Regular Army

Major Herbert M. Cox is assigned to Fort Bliss, Texas, for duty effective upon completion of his tour of foreign service in the Panama Canal Department.

Major Lloyd C. Ewen is assigned to Front Royal Quartermaster Depot, Front Royal, Va., for duty, effective upon completion of his present tour of foreign service in the Hawaiian Department.

The promotion of Captain Ernest E. Hodgson to grade of major with rank from February 2, 1937, is announced.

Major James A. McCallam is relieved from further assignment and duty at Fort Belvoir, Va., and from additional duty as attending veterinarian, Fort Washington, Md., and Fort Hunt, Va., effective on or about July 10, 1937, and directed to proceed to Fort Sill, Okla., for duty.

### Veterinary Reserve Corps

#### NEW ACCEPTANCES

Ingmand, Eugene B.....1st Lt...290 W. Cedar St., Zionsville, Ind.  
Tolley, Archie D.....1st Lt...1501 S. Nevada Ave., Colorado Springs, Colo.

#### NEW ASSIGNMENTS TO ACTIVE DUTY WITH CCC

Coop, Moray C.....1st Lt...San Antonio Dist. CCC, San Antonio, Texas.  
Upchurch, John W.....1st Lt...Fort Worth Dist. CCC, Fort Worth, Texas.  
Christensen, Nels F.....1st Lt...Fort Crook, Neb.  
Miller, James J.....1st Lt...Presidio of San Francisco, Calif.

#### TERMINATION OF ASSIGNMENT TO ACTIVE DUTY

Foote, Bernard E.....1st Lt...Silver City Dist., Silver City, N. Mex.  
Adan, Cirilo L. ....1st Lt...Fort Meade, S. Dak.

### Record Price Paid for Fox Pelt

Marshall Field and Company recently devoted an entire page in one of the Chicago newspapers to the advertisement of a silver fox pelt which the firm had bought from Fromm Brothers, of Wisconsin, for \$2,100, the highest price ever paid for a full silver pelt.



## MISCELLANEOUS

### Doctor Fladness Succeeds Doctor Pope

After 42 years of service in the U. S. Bureau of Animal Industry, during which time he served under nine Secretaries of Agriculture, Dr. George W. Pope retired as Chief of the Field Inspection Division on February 28.



DR. S. O. FLADNESS

Dr. Pope was graduated from the Chicago Veterinary College in 1889. He practiced in Chicago and Mobile, Ala., for about six years and then entered the government service at Boston, Mass. In 1900, he was placed in charge of the B. A. I. Quarantine Station at Garfield, later Athenia, N. J., and continued in that post until 1908, when he was transferred to San Diego, Calif., to engage in tick eradication work along the Mexican border.

In 1910, Dr. Pope was ordered to Washington, as Assistant Chief of the Quarantine Division. He became acting chief in 1922 and, six years later, when the division was absorbed by the Field Inspection Division, he was made chief of the latter unit.

Now that Dr. Pope no longer has to worry about keeping foreign plagues out of the United States, he plans to pursue a life-long ambition—a serious study of classical literature.

Dr. Pope has been succeeded by Dr. S. O. Fladness, who, for the past five years, served under Dr. Pope as Assistant Chief of the Field Inspection Division. Dr. Fladness has been in the Bureau service since 1906 and has had a varied experience in veterinary control work, not only in different parts of the United States, but in Mexico and South America. On two occasions he was sent to South America to investigate methods used there for controlling animal diseases, with particular reference to foreign trade, a question that is receiving unusual attention at the present time.

### Rabies

Rabies appears to have been unusually prevalent over a large area during recent months, if we may judge by the number of outbreaks reported through various channels.

January 13.—Three cases of rabies in dogs reported from Newcastle, Ind., and members of four families taking the Pasteur treatment.

January 22.—Seven cases of rabies in dogs reported from near Columbus, Ohio.

January 27.—Macomb, McDonough County, Ill., placed under quarantine by state officials.

February 1.—McMinn County, Tenn., placed under quarantine for 90 days.

February 4.—Vigo Township, Knox County, Ind., placed under quarantine for 120 days after an outbreak of rabies had been reported.

February 6.—Illinois Department of Agriculture promulgated an order forbidding dogs on school grounds during the school week in the months from September to June.

February 10.—One case of rabies in a horse reported from Mount Sterling, Ill.

February 11.—Four cases of rabies in dogs reported from Danville, Ind. Quarantine placed on all dogs in this vicinity.

February 18.—A report from Columbia, Mo., stated that rabies in dogs exists in Audrain, Callaway and Boone counties. The latter county has been placed under quarantine.

February 24.—Two cases of rabies in dogs reported from Holt, Mich. Dogs in village placed under quarantine.

February 25.—One case of rabies in a mule, which had bitten Dr. R. E. Parker, reported from Mayfield, Ky.

March 3.—Nauvoo, Hancock County, Ill., placed under rabies quarantine for indefinite period.

March 9.—Dr. Victor M. Montgomery, a veterinarian, of Elnora, Ind., died from rabies.

March 18.—One case of rabies in a dog from Flint, Mich., was reported from Durand. Shiawassee County was placed under quarantine.

### Third Annual Chappel Award

In recognition of her untiring efforts in behalf of American dogdom, during 1936, Mrs. M. Hartley Dodge, of Giralda Farms, Madison, N. J., was named to receive the third annual Chappel Award, presented at the opening of the Westminster Dog Show,



PLAQUE RECEIVED BY MRS. DODGE AS THIRD CHAPPEL AWARD

in Madison Square Garden, New York City, February 10. The award is made annually by the Chappel Kennel Foundation, of Rockford, Ill., for distinguished service to American dogdom. It is hoped that the award will stimulate public appreciation for such service.

In announcing the selection of Mrs. Dodge, the committee of judges pointed out that by her unflagging interest in and support of dogs, dog shows and everything pertaining to them, Mrs. Dodge has done much to further the advancement of purebred dogs in America. The judges considered, also, her remarkable ability as a judge, breeder and exhibitor; her generous contri-

butions of time, effort and money to the betterment of the dog game in all of its many phases and activities. Some of the more particular activities of Mrs. Dodge in behalf of the dog world were stressed in the following report which accompanied her nomination:

What the general public does not know—and probably would never know because the work is so quietly done—is the extensive and keen supervision given by Mrs. Dodge to all prospective legislation pertaining to dogs and their interests in the state of New Jersey, and, in fact, all states adjoining. She has already done a great deal to clean up the rabies situation and like difficulties which threaten the continued success of the dog industry and the health of the dogs themselves.

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### **Pennsylvania's Fiftieth Alumni Day**

This spring the Alumni Society of the School of Veterinary Medicine, University of Pennsylvania, will check off the first fifty years of continuous service to the veterinary profession. Exactly three years younger than the school which fathered it and with which it has been intimately associated throughout its life, the Society has in turn sponsored and felt the influence of many of the school's developments of these years. To commemorate this occasion there will be a special two-day program, June 4-5, including tours of the University, clinics and lectures at the Veterinary School, together with trips for the women folk and entertainment for all. These activities will fit in with and complement the general University Alumni Day program of June 5.

The event of extraordinary interest will be a dinner-dance, to be held at the Bellevue-Stratford Hotel, the evening of June 4. The Committee on Arrangements is grateful to Professor Weygandt, of the College, for accepting an invitation to be present and appear on the program. Plans have been laid to make this evening one that will be thoroughly enjoyed and long remembered by those who attend. The Committee wishes to add an invitation to the alumni of other veterinary schools to join the Pennsylvania men in this celebration. They will be made welcome together with their families and any friends of the profession.

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### **Increased Accommodations for Small Animals at Alabama Polytechnic Institute**

Due to the heavy increase in the number of in-patients at the School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, new and separate facilities for the Small-Animal Clinic

and Hospital are being provided in the State Serum Plant buildings, leaving the present clinic structure for large animals exclusively.

Five rooms, beside outside kennels and runs, are being made available for this important work, increasing the in-patient capacity from the present one of ten to 50 or 60, and greatly lowering the congestion at the popular daily out-patient clinics.

In addition to living quarters for a student attendant, the new facilities will include an office and reception room with drug and instrument cabinets, a combined operating and lecture room or amphitheatre, together with separate surgical, medical and isolation wards. Modern kennels are being provided and all contact between communicable conditions such as rabies, mange and distemper, and routine hospital cases will be avoided.

Dog-owners of the territory tributary to Auburn are enthusiastic regarding the improvement and are awaiting with interest the opening of the new clinic, scheduled to be announced by Acting Dean I. S. McAdory, some time this spring. Dr. W. M. Howell and his assistants will continue in charge of the department.

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### Radio Talks on Animal Health

The radio talks sponsored by the Associated Serum Producers, Inc., have been broadcast by seven stations located at strategic points throughout the Corn Belt, as follows:

KRNT	Des Moines, Iowa
WMT	Waterloo, Iowa
WCBS	Springfield, Illinois
KMBC	Kansas City, Missouri
KSOO	Sioux Falls, South Dakota
KFAB	Lincoln, Nebraska
KSAC	Manhattan, Kansas

According to an announcement made recently by Dr. E. C. Jones, president of Associated Serum Producers, Inc., arrangements are being made to extend this service by adding several other stations covering two more states.

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### Twelfth International Veterinary Congress Prize

A feature of the Omaha meeting will be the first award of the Twelfth International Veterinary Congress Prize. It will go to some member of the American Veterinary Medical Association for the most noteworthy contribution to the advancement of vet-



erinary science during the year—the interval between the 1936 and 1937 meetings. The award will be in cash and will consist of the interest on a \$5,000 endowment created in 1936, on a recommendation made by the Finance Committee of the Twelfth International Veterinary Congress. The amount of the award this year will be about \$137.50.

Selection of the 1937 winner will be made by a committee consisting of Colonel Robert J. Foster, Chairman, Dr. John R. Mohler, Dr. Cassius Way, Dr. C. M. Haring and Dr. J. V. Lacroix. The Committee will appreciate hearing from any members of the A. V. M. A. who desire to offer any information, recommendations or data that will be of assistance in selecting the 1937 recipient of the award.

### BUREAU TRANSFERS

DR. T. H. APPLEWHITE (Ind. '14), from Jacksonville, Fla., to Atlanta, Ga., in charge of field station.

DR. THOS. J. MUXLOW (K. S. C. '30), from Portal, N. Dak., to Watertown, S. Dak., on meat inspection.

DR. CHARLES T. HIGGINBOTHAM (Cin. '18), from Albany, N. Y., to Erie, Pa., on meat inspection.

DR. CHARLES M. CHASE (Colo. '19), from Anderson, Ind., to Indianapolis, Ind., on meat inspection.

DR. WILLIAM L. GRUBB (Ont. '28), from Baltimore, Md., to Moultrie, Ga., on meat inspection.

DR. NELSON N. HATCHER (St. Jos. '20), from Baton Rouge, La., to Fort Worth, Texas, on meat inspection.

DR. JOSEPH STAFFORD (K. C. V. C. '06), from Keene, N. H., to Boston, Mass., on meat inspection.

DR. CHARLES E. DIMON (K. S. C. '32), from Los Angeles, Calif., to Sioux City, Iowa, on meat inspection.

DR. HUGH H. HERVEY (K. C. V. C. '12), from Los Angeles, Calif., to Mason City, Iowa, on meat inspection.

DR. ROY C. BISSELL (McK. '16), from Watertown, S. Dak., to Bismarck, N. Dak., on meat inspection.

DR. CLYDE R. QUILLIN (Ont. '24), from Boston, Mass., to Richmond, Va., on meat inspection.

DR. BENJAMIN H. STEINER (Ind. '24), from Detroit, Mich., to Piqua, Ohio, on meat inspection.

DR. JOHN A. ELLENS (Mich. '29), from Fostoria, Ohio, to South Saint Paul, Minn., on meat inspection.

DR. A. L. HIRLEMAN (Cin. '03), from Atlanta, Ga., to Jacksonville, Fla., on tick eradication.

DR. JAMES T. MILLS (K. C. V. C. '16), from Opelousas, La., to Oklahoma City, Okla., Packers and Stockyards Division.

DR. RALPH V. PILGRIM (K. C. V. C. '15), from Natchitoches, La., to San Antonio, Texas, on field inspection.



## VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The December meeting of the Veterinary Medical Association of New York City was held at the Hotel New Yorker, Wednesday evening, December 9, 1936.

The Association was honored by the presence of Capt. Alexander Bustamande, a member of the Chilean Army Horse Show Team, which recently competed for international honors in the various national horse shows held in this country and Canada. Capt. Bustamande is a veterinarian, a graduate of the Chili National College. He is a professor on the veterinary staff of that college and gives his mornings to the instruction of students. In the afternoons, he is occupied with his small-animal hospital and equine practice. During his stay in this country, Capt. Bustamande spent much time with Drs. Raymond J. Garbutt, Cassius Way and C. V. Noback, in exchanging ideas on small- and large-animal medicine and surgery. Capt. Bustamande brought to the members of our group the good will and well wishes of our fellow practitioners in South America, and through our president, Dr. C. V. Noback, the Veterinary Medical Association of New York City, extended, on behalf of the practitioners of this country, our sincere expression of good will, amity and coöperation to the veterinarians of the Central and South American countries.

Our speaker of the evening, Dr. Norman J. Pyle, of Pearl River, brought to us a very important subject for consideration, "Gastro-Intestinal Diseases of the Dog with Thoughts as to Their Differentiation." The presentation of this subject was done in a masterful manner as only Dr. Pyle is capable of doing. The reporter does not feel justified in reducing the subject matter to mere statements for a matter of record, but would rather suggest that, for a more complete picture of this vital subject, the November-December *Veterinary Bulletin*—Lederle, be carefully read. In this bulletin, the subjects of black tongue, infectious gastro-enteritis, uremia, canine typhus, leptospiral infec-

tion, canine piroplasmosis and *Salmonella enteritidis* infection are discussed. Dr. Pyle discussed each of these topics and showed the difficulties in their differentiation as far as clinical symptoms are concerned. He related an instance of leptospiral infection in which a diagnosis was made after the bacteriological examination of the animal body. It was the opinion of Dr. Pyle that this procedure will be the requirement in small-animal practice, if we are to render competent service and successfully combat diseases with masked symptoms, such as those resembling distemper on the surface, with the commonly accepted signs known to all who treat and handle small animals, but with the true focus of infection beyond clinical detection. The membership extended a hearty vote of thanks to Dr. Pyle for his brilliant presentation of a subject which will command more attention in the near future.

Following the presentation of this subject, Drs. M. L. Morris, C. P. Zepp, G. W. Little, L. W. Goodman, J. A. S. Millar and S. Shapera discussed the subject.

The election of officers for the ensuing year resulted as follows: President, Dr. R. S. MacKellar, Jr., New York; vice-president, Dr. L. W. Goodman, Great Neck; secretary-treasurer, Dr. J. B. Engle, Summit, N. J.; Board of Censors: Dr. C. P. Zepp, Chairman, New York; Dr. J. Lebish, Bronx; Dr. S. Shapera, Mamaroneck; Dr. J. Elliott Crawford, Far Rockaway, and Dr. S. Apfelberg, Yonkers.

R. S. MACKELLAR, JR., *Secretary*.

### MAINE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maine Veterinary Medical Association was held at the Hotel North, Augusta, January 6, 1937, with a total attendance of 27.

An amendment to the Constitution was passed, allowing veterinarians in the employ of the federal government, who are transferred to Maine, to become active members of the Maine Association upon presentation of proof that they are active members in good standing of a state association.

Dr. L. S. Cleaves, of Bar Harbor, gave a very interesting talk on ear canker. Dr. J. E. Shillinger, U. S. Bureau of Biological Survey, of Washington, D. C., gave an illustrated lecture on "Recent Investigation of Diseases of Wildlife."

Officers reelected for the coming year are: President, Dr. R. E. Libby, Richmond; vice-president, Dr. J. F. Witter, Orono, and secretary-treasurer, Dr. S. W. Stiles, Falmouth Foreside.

Dr. C. F. Davis, of Rumford, and Dr. J. F. Witter, of Orono, were elected delegate and alternate, respectively, to the A. V. M. A. House of Representatives.

S. W. STILES, *Secretary-Treasurer*.

### ATLANTA VETERINARY MEDICAL SOCIETY

The Atlanta Veterinary Medical Society held its sixth annual meeting at the Atlanta Athletic Club, January 7, 1937. After a good dinner, the meeting was called to order by the president, Dr. R. F. Thomas. A round-table discussion was held, with these subjects discussed at length: botulism in horses and mules, distemper in dogs, Bang's disease in dairy herds, and methods of collection of fees.

During the past year, the Society worked with the city authorities in perfecting a compulsory rabies ordinance, whereby no one could escape having his or her dog vaccinated and licensed. The compulsory ordinance of 1929 was amended, so as to prevent any loop-holes. The Atlanta authorities made all of the practicing veterinarians in the city deputy clerks, in selling the licenses. They cannot vaccinate a dog without collecting the license, as the vaccination tags and certificates are the official license tags and certificates. These are furnished by the city. The certificates are in triplicate. One goes to the owner of the dog, one to the City Health Department and the veterinarian keeps one. This method is working satisfactorily in aiding the city in checking up on the dogs that have not been vaccinated and licensed.

Resolutions were unanimously passed supporting our State Veterinarian, Dr. J. M. Sutton, and our newly elected Commissioner of Agriculture, Hon. Columbus Roberts, in their work with the live stock industry. The State Veterinarian's office was badly disrupted during the reign of Governor Talmadge.

The election of officers ensued. Dr. J. C. Wright was elected president, Dr. J. W. Thome, vice-president, and Dr. Chas. C. Rife (reëlected) secretary.

CHAS. C. RIFE, *Secretary*.

### CORNELL CONFERENCE OF VETERINARIANS

The twenty-ninth annual Conference of Veterinarians was held at the New York State Veterinary College at Cornell University, Ithaca, January 7-8, 1937.

Dr. H. L. Gilman presided at the morning session of the first day. Motion pictures, "Wound Healing I," was the first feature on the program. This part of the film is a vivid portrayal of the operation of natural forces in wound healing by second intention. Dr. D. H. Udall made the "Opening Remarks." He traced the development of the conference and veterinary science. He showed that since the first annual conference, perplexing veterinary problems had been solved and become simple, and those which now perplex and in the future will continue to perplex, will likewise admit of solution.

Dr. H. H. Dukes gave a talk, illustrated with moving pictures, on "Gastro-Intestinal Motility in the Ruminant." The pictures were made by the speaker in his own laboratory. They are a helpful contribution to the knowledge of the types of movement, their functions and the rôles they play in helping to carry out the work of stomach and intestines in the ruminant.

Professor L. W. Sharp, Professor of Cytology in the College of Agriculture at Cornell, lectured on "The Physical Basis of Heredity." The speaker showed how the genes that transmit hereditary characteristics had been isolated and identified by experiments on fruit flies. By artificial treatment with x-ray, the genes were influenced, in several days, to an extent that would require years naturally. Studies in human and animal heredity are held to be gainers from these studies.

Drs. H. J. Milks and H. C. Stephenson spoke on "Diabetes in Dogs." Symptoms, diagnosis, treatment and prognosis of the cases were supported by reports of blood, urine and, in some cases, postmortem findings. Such records are increasing evidence to veterinarians and owners that the dog is subject to diabetes and should be protected from it.

Dr. H. H. Dukes presided during the afternoon session of the first day. A film, "Ovulation, Fertilization and Early Development of the Mammalian Egg," was an instructive opening number. Dr. E. A. Caslick, of Paris, Ky., an alumnus of Cornell, detailed his "Observations on Breeding Problems of the Thoroughbred Mare." He discussed the incidences and practices in connection with the breeding of 989 mares, 683 foaling and 306 having been barren and maiden mares. The time of the review was for the period 1932-36. Care of the breeding animals, the time of breeding, mortality of foals under 30 days and the abortion mortality, with causes, were subjects discussed. Several excellent charts were an aid to both speaker and audience.



Dr. Frank Bloom, of Flushing, N. Y., spoke on "The Clinical Interpretations of Urine Analysis." Experience gained from the analysis of samples from hundreds of his patients was the basis for a helpful discussion of those characteristics and constituents most helpful in establishing a diagnosis and treatment. A chart showing the principal complaint, the disease and the changes in the urine, lent added value to a helpful discussion.

Dr. Ervin A. Tusak, a practitioner of medicine, New York City, has shown a deep interest in "Eye Diseases in Veterinary Medical Practice." His enthusiasm was transmitted to us through his well-illustrated discussion of the physiology and pathology of the eye. Showing the relation of endocrinology, urology, metabolic changes and the state of the nervous system to the study of the eye disorders was considered to be helpful.

Dr. R. R. Birch discussed "Natural and Artificial Immunity to *Brucella Abortus*." The speaker said that the use of vaccine for the control of Bang's disease has been rather generally discredited. Calfhood vaccination with a strain of low virulence (U. S. B. A. I. 19) shows somewhat more encouraging results than when other strains have been used. Vaccination was recommended only in heavily infected herds. Further tests will reveal the efficiency of the low-virulence strain.

The early part of the evening of the first day was reserved for alumni meetings. At the close of these meetings, the members of the Conference were guests at an indoor polo game at the Cornell Riding Hall. The game was made possible through the courtesy of the Department of Military Science and Tactics and Major C. E. Boyle, polo coach. Three teams, the "Ringbones," "Capped Hocks" and "Fistulous Withers," put on the games. The "Ringbones" and "Capped Hocks" played three spirited chukkers. The score, 16-15, favored the "Ringbones." This team is, at most games, the Cornell Varsity. Roberts, Combs and T. Lawrence are veterinary students who are helping to make polo history at Cornell. Christian and H. Lawrence, of the other teams, are veterinary students to be. The "Capped Hocks" beat the "Fistulous Withers" in a two-period game. The entertainment of the evening was real and appreciated.

Clinics and demonstrations were held from nine to eleven o'clock the second morning. A well diversified program was carried out. Visiting specialists and members of the staff provided the operations and demonstrations.

At 11:00 a. m., Dr. Fred W. Miller, of Washington, D. C., gave a lecture and demonstration on "Artificial Insemination." Dr. Miller reviewed the physiological requirements. He told an interested audience that transportation, extended service and prevention of disease, justified the process. Injection of semen into the cervix had proven more successful in his practice than vaginal insemination. Methods for obtaining semen from the male and its injection into the cervix of the female were demonstrated.

Dr. M. G. Fincher was in charge of the program of the second afternoon. The film, "Wound Healing II," an instructive continuity of film I, was the first on the program. "Recent Developments in Minerals and Vitamins for Farm Animals," was the topic developed by Dr. L. A. Maynard, Professor of Animal Nutrition, at Cornell University. Recognition of the species difference in requirements was stressed, especially in relation to the vitamins. This applies more to poultry than other animals. Calcium, phosphorus, iodine, iron and copper were mentioned as elements most useful in animal nutrition. Zinc, manganese, magnesium, cobalt, sulfur and potassium are others playing a part. That lack of magnesium or cobalt may contribute to distinct disease syndromes, was indicated. Iron is supplied in inorganic just as successfully as in organic compounds. The rôle of iodine was noted and a suggestion made that feeding iodine is not economical in order to increase it in milk. Dr. Maynard indicated that natural foods are a better source of vitamins and minerals for animals than special mixtures. Vitamins and minerals were held to be abundant in food properly blended.

"Significance of the Hemolytic Streptococci Found in Milk," was discussed by J. Howard Brown, Professor of Bacteriology, Johns Hopkins Medical School. Professor Brown said that milk-borne diseases are due to human streptococci which have entered the udder rather than to the mastitis organisms. By way of comparison and identification, sorbital and hippurate negative reacting mastitis strains were pointed out to be mastitis, and that those organisms liquefying human fibrin are human pathogens.

Drs. D. W. Baker, H. C. Stephenson and A. G. Danks, of Cornell University, introduced a "Colloquium on the Diagnosis and Control of Animal Parasites." Many helpful ideas were advanced during the introduction and the extended discussions which followed.

Dean Hagan presided at the Conference dinner, at Willard Straight Hall. Cornelius Betten, Dean of the University faculty, brought "Greetings from the University," a gracious greeting from a kindly, scholarly gentleman, who has long held a true interest in agriculture and veterinary medicine.

Dr. Cassius Way represented President Foster and the A. V. M. A. Dr. Way pointed out the disparity in the membership in the A. V. M. A. between the East and West. He pleaded for an increase in interest and membership in the East.

H. E. Babcock, a trustee of Cornell University, and his "Kernels, Screenings and Chaff," are known to millions of people. The development of farm organizations and the struggles through years of poor prices and depression to a firmer economic situation at the present, were parts of farm history reviewed. The increasing value of farm accounts owed veterinarians and the influence of government control over farmers as affecting both farmers and veterinarians were mentioned by the speaker.

A. A. Allen, Professor of Ornithology, Cornell University, took the guests "Hunting with a Microphone." Birds, their habitats, their calls and songs, and their habits were the fruits of a hunting expedition held in the South and West. Several sound-films which were given made this expedition most interesting and helpful to all.

With an attendance of slightly less than 300, the Conference has passed into history. Its helpfulness to practitioners and staff has marked another milestone. The helpfulness and influence continue to grow with each successive year.

C. E. HAYDEN, *Reporter.*

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## OKLAHOMA VETERINARY MEDICAL ASSOCIATION

The twenty-second annual meeting of the Oklahoma Veterinary Medical Association was held in the Skirvin Hotel, Oklahoma City, January 11-12, 1937. Notwithstanding the most uninviting weather, with ice and sleet covering the highways, that made auto travel a distinct hazard, the attendance was very satisfactory. The total registered reached 110, among them a good sprinkling from outside of the state.

President Hiatt opened the meeting and Mayor Frank Martin extended a welcome to the members and visitors. A business session was held that occupied the entire forenoon of the first day. Reports were heard from the various officers and commit-

tees, the annual election of officers held, and other business of the Association transacted.

Colonel Robert J. Foster, president of the A. V. M. A., was present throughout the entire meeting, taking part in many of the discussions. He headed the program by speaking on the subject, "The American Veterinary Medical Association—Our Organization," in which plans were outlined for certain changes of policy in the A. V. M. A. calculated to bring in more members, increase its activities and more nearly serve the needs of all branches of the profession. All of the proposed changes were approved by a resolution of the Association.

Other contributions to the program, all of them containing an abundance of timely and interesting information, were presented as follows:

"The Prussic Acid-Bearing Forage Plants and Their Toxicity to Farm Animals," by Dr. V. G. Heller, professor of Agricultural Chemistry Research, Oklahoma A. & M. College, Stillwater.

"Progress in the Control and Eradication of Bang's Disease," by Dr. Chas. H. Kitselman, Kansas State College, Manhattan, Kan.

"A Study of Blackleg and Its Complications," by Dr. Frank Breed, Lincoln, Neb.

"Gastro-Intestinal Disturbances in Dogs," by Dr. R. L. Anderes, Kansas City, Mo.

"Safeguards in the Preparation and Use of Veterinary Biological Products," by Dr. F. N. Elwell, U. S. B. A. I. Inspector-in-Charge, Oklahoma City.

"Scientific Horseshoeing, with Special Reference to Correcting Abnormal Conditions," by Lt. Col. Daniel Leininger, V. C., U. S. Army, Fort Sill.

Question-box and round-table discussion, led by Dr. Frank Breed.

"Intravenous Therapy in Small Animals," by Dr. R. L. Anderes.

"Résumé of the Past Years Accomplishments in Live Stock Sanitation," by Dr. C. C. Hisel, State Veterinarian, Oklahoma City.

The banquet, served Monday evening, in the Venetian Room of the Skirvin Hotel, was attended by more than 150. Dr. L. H. Ritzhaupt, former president of the Oklahoma State Medical Association, did the honors as toastmaster. Colonel Foster and other prominent guests were introduced and responded with short talks fitting the occasion. Suitable entertainment, consisting of orchestral and vocal selections, and a variety of specialty acts, added to the enjoyment of the evening. Dancing followed.

Special entertainment for the visiting ladies, of whom there were about 50 in attendance, consisted of a theater party, bridge and a special noonday luncheon at the Skirvin Hotel, provided by the officers of the Ladies Auxiliary.

The election of officers for the year resulted as follows: President, Dr. W. L. Christy, Tonkawa; vice-president, Dr. J. L. Mosley, Temple, and secretary-treasurer, Dr. F. Y. S. Moore,

McAlester. Dr. Moore's election as secretary marks the preliminary step towards combining the offices of the secretary and treasurer, final action on which will be sought at the next meeting of the Association, when the necessary amendment to the Constitution and By-Laws can be adopted.

C. H. FAUKS, *Secretary*.

### INTERMOUNTAIN LIVESTOCK SANITARY ASSOCIATION

The Intermountain Livestock Sanitary Association held its tenth annual meeting at Ogden, Utah, on January 11-13, 1937. The convention was pronounced as eminently successful and was well attended by veterinarians of the intermountain region.

Opening remarks by the president, Dr. E. M. Gildow, of Moscow, Idaho, were followed by the presidential address, which was a comprehensive discussion of veterinary education for students majoring in agriculture. The basic science subjects and applied science subjects necessary for agriculture students were discussed.

Dr. Glenn Holm, of Rexburg, Idaho, then led a discussion on so-called infectious enteritis of swine. Continued discussion revealed that heavy loss has been sustained from this disease throughout the intermountain and northwestern states. Most of the loss may be traced to the importation of hogs from the mid-western Corn Belt area.

Avian botulism, an outstanding hazard to wild fowl in the intermountain region, was illustrated by moving pictures shown by Mr. E. R. Kalmbach, of the U. S. Biological Survey, Denver, Colo. Good control has been obtained in sections where alkaline areas have been more deeply flooded or drained. Fluctuations in water levels, however, continue to provide favorable conditions for this disease.

The operation of a municipally owned abattoir and the establishment of veterinary inspection in the same were ably discussed by Dr. O. Wennergren, of Logan, Utah. The proceeds received the past year in the operation of this modern plant are expected to pay for all operating costs, including inspection of the meat. All meat sold in the city of Logan is slaughtered and inspected at this municipal plant with the exception of U. S. inspected meat shipped into the city. Dr. Glenn Holm discussed practical municipal milk inspection and points to be considered in its administration.



Informal group meetings were held in the evening, at which problems pertaining to the respective groups were discussed. The research workers group and the federal workers group held informal discussions, which were somewhat of an innovation for the organization.

"Dieting Hospitalized Dogs," was the title of a paper presented by Dr. J. V. Lacroix, of Evanston, Ill., the following morning. Food formulas applicable under varying conditions were listed. The need for adequate government inspection and proper labeling of all products going into canned dog foods was stressed by Dr. Lacroix. Recent developments in our knowledge concerning equine encephalomyelitis was discussed. Dr. Hadleigh Marsh, of Montana State College, reported that efforts to control losses by the simultaneous administration of serum and virus were not entirely satisfactory. The possibility of a superimposed and separate disease entity in the second outbreak was mentioned. Dr. C. B. Phillip, of the U. S. Public Health Service, Hamilton, Mont., presented an interesting group of moving pictures showing the symptoms of the 1936 outbreak in Montana. He reported negative results in attempts made to transmit the disease by means of ticks.

Favorable results from the use of formolized vaccine were reported by Dr. M. M. McCoy, Deputy State Veterinarian of Idaho. Out of 1,789 horses which received the vaccine, 18 were known to have developed the disease. In a portion of these, sufficient time had not elapsed for the recognized period of immunity development. It is likely that the number of unreported cases would bring the total number to around 36 breaks. Dr. A. H. Francis, of Denver, Colo., reported characteristics of the disease during the 1936 Colorado outbreak.

Some observations on the control of fowl-pox were outlined by Dr. Hugh Hurst, of Salt Lake City. Dr. Hadleigh Marsh reported his experience encountered in eliminating Bang's disease from a herd of range cattle.

"Field Technic in Western Bang's Disease Testing," was ably discussed by Dr. F. H. Melvin, U. S. Bureau of Animal Industry, Cheyenne, Wyo. His talk was well illustrated with an exhibit of testing equipment and supplies. In view of some danger of spreading diseases such as anaplasmosis it was advised that the use of nose-tongs be avoided.

A paper on "Oat Hay Poisoning," by Dr. I. E. Newsom and co-workers of the Colorado Agricultural Experiment Station, was read and discussed by Dr. A. H. Francis. Symptoms are sugges-

tive of hydrocyanic acid poisoning. Losses are usually preceded by a rain or snow on the feed in question. Dr. A. G. Fisk, of Denver, Colo., presented a well-prepared talk on "Coöperation." He brought out the necessity of keeping paramount the best interests of the live stock industry as a whole.

Live stock loss prevention, what has been accomplished in the past and what yet remains to be accomplished, was the subject treated by Dr. W. T. Spencer, of Omaha, Neb.

The Parasites Committee, headed by Dr. W. T. Huffman, and the Bang's Disease Committee, headed by Dr. F. E. Murray, gave reports which were duly approved and accepted by the membership.

Following a short business session, the following officers were elected for the coming year: President, Dr. O. Wennergren, Logan, Utah; first vice-president, Dr. W. T. Huffman, Salt Lake City, Utah; second vice-president, Dr. A. H. Francis, Denver, Colo.; third vice-president, Dr. S. E. Nelson, Preston, Idaho, and secretary-treasurer, Dr. D. E. Madsen (reëlected), Logan, Utah.

The Ladies Auxiliary had a social program of entertainment which was well attended by ladies of the intermountain region. The second day of the convention was appropriately terminated by a sumptuous banquet.

D. E. MADSEN, *Secretary.*

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## OHIO STATE VETERINARY MEDICAL ASSOCIATION

The fifty-fourth annual meeting of the Ohio State Veterinary Medical Association was held in Columbus, January 14-15, 1937. This proved to be one of the best meetings held for some time, especially from the standpoint of progress.

The literary program consisted of the following:

"The Veterinarian's Place in Public Health," by Dr. J. W. Burke, Dayton.

"Sterility in the Mare," by Dr. E. A. Caslick, Paris, Ky.

"Lameness of the Horse" (illustrated), by Dr. W. F. Guard, Columbus.

"Review of the State Program for the Control of Live Stock Diseases," by Dr. F. A. Zimmer, Columbus.

"Parasites of Animals Transmissible to Man and the Veterinarian's Responsibility in Their Control," by Dr. E. A. Benbrook, Ames, Iowa.

"Diseases of Swine Due to or Associated with Disorders of Metabolism and Nutrition," by Dr. H. C. H. Kernkamp, Saint Paul, Minn.

"Small-Animal Therapeutics," by Dr. C. W. Bower, Topeka, Kan.

"Diseases of Wildlife," by Dr. J. E. Shillinger, Washington, D. C.

"The Ruminant Stomach in Some Phases of Digestion and Nutrition" (illustrated), by Dr. A. F. Schalk, Columbus.

A banquet and dance brought the program of the first day to a close. Dr. J. W. Jackman presided as toastmaster and introduced the guest speakers. Major Norman Imrie, the principal speaker of the evening, gave a very entertaining and instructive talk. Over 175 were in attendance at the banquet.

A special program of entertainment for the ladies was provided during their visit to Columbus with approximately 100 in attendance.

Officers for 1937 were elected as follows: President, Dr. H. E. Myers, Cleveland; vice-president, Dr. W. F. Guard, Columbus; treasurer, Dr. D. C. Hyde, Columbus; secretary, Dr. R. E. Rebrassier (reëlected), Columbus, and member of the Executive Committee, Dr. J. F. Planz, Akron. Dr. F. A. Zimmer, Columbus, and Dr. J. H. Lenfesty, Lyons, were elected delegate and alternate, respectively, to the A. V. M. A. House of Representatives.

R. E. REBRASSIER, *Secretary*.

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### IDAHO VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Idaho Veterinary Medical Association was held in the Federal Building, Boise, January 18, 1937. Despite the winter storms, there were 30 members present. The meeting consisted primarily of round-table talks on three major subjects.

Drs. T. W. White, M. M. McCoy and H. R. Groome led the discussion on equine encephalomyelitis. The main points established in this discussion were:

(1) The prophylactic use of serum in the prevention of this disease was contra-indicated, due to the subsequent severe losses in such animals. (2) The use of the new formolized brain-tissue virus was recommended and shown to be effective in the prevention of the disease with no apparent after-effects when used approximately 21 days before the disease shows up. (3) The most satisfactory method of treating this disease in the field is through the use of good nursing practices and symptomatic treatment.

Drs. E. M. Gildow, A. J. Powell and Tom Elliott led the discussion on infectious enteritis or swine dysentery. This disease has become very prevalent in Idaho as well as many other western states due to the introduction of feeder hogs from the Middle West. More effective means of preventing the introduction of these pigs seem necessary since the mortality in such pigs is so high that profits are not realized by the swine-feeders. Three points of importance were stressed in the control of this disease:

(1) Hog cholera must be excluded as a possible cause of this trouble. (2) Rigid quarantine measures are essential to prevent the spread of this disease to adjacent native hogs. (3) Two treatment procedures were recommended to be more or less effective, the introduction of a double dose of hog cholera serum, and the use of large amounts of internal antiseptics in the form of sulfo-carbolates.

Drs. John T. Dallas and T. W. White and Mr. Roger D. Minster led the discussion on the Bang's disease program in Idaho.

The biennial election of officers held at the summer meeting of 1936 resulted as follows: President, Dr. J. H. Ikard, Gooding; vice-president, Dr. K. K. Shott, Buhl, and secretary-treasurer, Dr. E. M. Gildow, Moscow.

E. M. GILDOW, *Secretary-Treasurer.*

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### SOUTH CAROLINA ASSOCIATION OF VETERINARIANS

The annual meeting of the South Carolina Association of Veterinarians was held at the Jefferson Hotel, Columbia, on the night of January 19, 1937. A banquet was served and 35 veterinarians were present.

The regular routine of business was transacted and the following officers were elected for the coming year: President, Dr. H. L. Frieze, Gaffney; vice-president, Dr. Don Kitchen, Greenville, and secretary-treasurer, Dr. R. A. Mays (reëlected), Columbia.

W. A. BARNETTE, A. V. M. A. *Res. Sec. for South Carolina.*

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### IOWA VETERINARY MEDICAL ASSOCIATION

The forty-ninth annual meeting of the Iowa Veterinary Medical Association was held at the Fort Des Moines Hotel, Des Moines, January 19-21, 1937. The attendance was one of the largest in recent years, in spite of the icy roads. Almost 100 ladies were present.

On Tuesday, Dr. W. F. Guard, of Ohio State University, gave a very interesting paper on "Surgical Technic," and Dr. W. A. Aitken, of Merrill, gave an excellent paper on "Horse Practice," elaborating on so-called "mold poisoning" and encephalitis.

Wednesday morning, Dr. H. C. H. Kernkamp, of the University of Minnesota, discussed "Swine Practice," which included some interesting facts in regard to immunity. This paper was discussed by Dr. J. O. F. Price, of Algona. In the afternoon, Dr.

Ward Giltner, of Michigan State College, gave a very interesting paper on "Municipal Milk and Meat Inspection." The annual banquet was held Wednesday evening, with almost 400 in attendance. Dr. George R. Fowler, of Iowa State College, acted as toastmaster. Hon. John Valentine, Lieutenant Governor of Iowa; Hon. Thomas L. Curran, Secretary of Agriculture; Dr. H. A. Seidell, Chief of the Iowa Bureau of Animal Industry, and many other prominent speakers were introduced.

Thursday morning, Dr. J. C. Flynn, of Kansas City, Mo., discussed "Small-Animal Practice." The business session Thursday afternoon was followed by a discussion on "Cattle Practice," by Dr. C. L. Crider, of Elkader. Others who contributed to the program and their subjects were:

"One Case of Glanders," by Dr. J. B. Winkel, of Algona.

"A New Method of Treating Colon Impaction in Horses," by Dr. N. A. Kippen, of Independence.

"Principles of a Dairy Sanitation Program" (illustrated by moving pictures), by Dr. W. H. Riser, Glenwood.

"Brucellosis—Undulant Fever, Public Health Aspects," by Drs. Walter L. Bierring, Health Commissioner, and Carl F. Jordan, epidemiologist, of Des Moines.

"Bang's Disease Control," by Dr. A. R. Menary, of Cedar Rapids.

"Bang's Disease," by Dr. J. A. Barger, U. S. Bureau of Animal Industry, Des Moines.

"Unusual Dystokias of the Bitch," by Dr. F. F. Parker, of Des Moines.

"Problems of Parasite Control in the Mid-West," by Dr. E. A. Benbrook, Iowa State College.

"Necrobacillosis in Cattle," by Dr. O. E. York, Monticello.

"Prussic Acid Poisoning," by Dr. W. C. Scholty, Leon.

The following officers were elected for the ensuing year: President, Dr. J. C. Carey, West Liberty; first vice-president, Dr. K. H. Gubser, Adel; second vice-president, Dr. A. C. Anderson, Centerville; secretary-treasurer, Dr. C. J. Scott (reëlected), Knoxville, and member of the Executive Board, Dr. P. V. Neuzil, Blairstown.

C. J. SCOTT, *Secretary*.

## STATE VETERINARY MEDICAL ASSOCIATION OF TEXAS

The twenty-seventh annual meeting of the State Veterinary Medical Association of Texas was held at the Texas Hotel, Fort Worth, January 20-21, 1937.

Outstanding speakers, including Drs. J. F. DeVine, I. B. Boughton, R. C. Dunn, R. L. Anderes, R. T. Dickinson and R. A. Self, made the meeting most successful. The entire program was



devoted to the presentation of papers, followed by questions and informal discussions.

The following officers were elected for the coming year: President, Dr. L. I. Lucey, Wichita Falls; first vice-president, Dr. Leon G. Cloud, Laredo; second vice-president, Dr. Sam E. Buntton, Jr., Del Rio; secretary-treasurer, Dr. D. Pearce, Leonard; honorary president, Dr. H. L. Darby, Fort Worth, and corresponding secretary, Dr. M. B. Starnes, Dallas.

Dr. M. E. Gleason, of San Antonio, and Dr. I. B. Boughton, of Sonora, were elected delegate and alternate, respectively, to the A. V. M. A. House of Representatives.

M. B. STARNES, *Corresponding Secretary.*

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### MASSACHUSETTS VETERINARY ASSOCIATION

The annual meeting of the Massachusetts Veterinary Association was held in Boston, January 27, 1937, with about 50 members in attendance.

The speakers at the meeting were Dr. Marshall N. Fulton, of the Harvard Medical School, and Dr. H. M. Martin, of the School of Veterinary Medicine, University of Pennsylvania. Dr. Fulton spoke on "Diseases of the Urinary Tract." He reviewed briefly the anatomy of the kidney and the mechanics of urine formation, after which he described in detail various tests used in routine urinalysis, and gave some very enlightening information on the interpretation of various findings. Dr. Martin spoke on "Post-mortem Technic," and also pointed out the significance of various pathological findings.

The following officers were elected for the ensuing year: President, Dr. J. H. O'Brien, Taunton; first vice-president, Dr. W. H. Shannon, Dorchester; second vice-president, Dr. G. B. Schnelle, Newton, and secretary-treasurer, Dr. H. W. Jakeman (re-elected), Boston.

H. W. JAKEMAN, *Secretary-Treasurer.*

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### NEVADA STATE VETERINARY ASSOCIATION

The annual meeting of the Nevada State Veterinary Association was held at the Department of Veterinary Science, University of Nevada, Reno, January 29, 1937.

Dr. W. H. Boynton, of the Division of Veterinary Science, University of California, was guest speaker. After the business meeting the following program was presented:



"Progress in Federal-State Bang's Disease Program in Nevada," by Dr. R. A. Given, Reno.

"Anaplasmosis," by Dr. W. H. Boynton, Berkeley, Calif.

"Experiments in Calfhood Vaccination in Connection with Bang's Disease Control," by Dr. W. F. Fisher, Reno.

"Progress in Hog Cholera Control with Tissue Vaccine Methods" (illustrated), by Dr. W. H. Boynton.

"Results of Investigation into the Cause of Stiff Lamb Disease," by Dr. L. R. Vawter, Reno.

Motion pictures of fox farming, equine encephalomyelitis and other subjects were shown, and case reports and incidents in the work of federal and state veterinarians were discussed.

The following officers were elected for the coming year: President, Dr. W. K. Shidler; vice-president, Dr. Lyman R. Vawter, and secretary-treasurer, Dr. Warren B. Earl, all of Reno.

WARREN B. EARL, *Secretary*.

### NORTH CAROLINA STATE VETERINARY MEDICAL ASSOCIATION

A special winter meeting of the North Carolina State Veterinary Medical Association was held at the Hotel Sir Walter Raleigh, January 29, 1937, with 35 veterinarians in attendance. Both afternoon and night sessions were held. A feature of the meeting was an address by Honorable W. Kerr Scott, new Commissioner of Agriculture.

The Association went on record as favoring Washington, D. C., as the 1938 meeting place of the A. V. M. A. It was decided to contribute \$25.00 to the fund being raised by the A. V. M. A. for financing veterinary exhibits at the New York World Fair and the San Francisco Exposition in 1939. A committee on Public Relations was named to cooperate with a similar A. V. M. A. committee. A discussion on meat inspection in the state produced a great deal of interest. A committee was appointed to work out a plan whereby the Veterinary Division of the State Department of Agriculture could maintain closer supervision and expand the work.

Dr. A. A. Husman, of Raleigh, was reelected delegate, and Dr. J. H. Brown, of Tarboro, was elected alternate to the A. V. M. A. House of Representatives.

J. H. BROWN, *Secretary-Treasurer*.

### CHICAGO VETERINARY MEDICAL ASSOCIATION

The regular monthly meeting of the Chicago Veterinary Medical Association was held at the Palmer House, Chicago, February

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The following officers were elected for the coming year: President, Dr. L. I. Lucey, Wichita Falls; first vice-president, Dr. Leon G. Cloud, Laredo; second vice-president, Dr. Sam E. Buntton, Jr., Del Rio; secretary-treasurer, Dr. D. Pearce, Leonard; honorary president, Dr. H. L. Darby, Fort Worth, and corresponding secretary, Dr. M. B. Starnes, Dallas.

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### CHICAGO VETERINARY MEDICAL ASSOCIATION

The regular monthly meeting of the Chicago Veterinary Medical Association was held at the Palmer House, Chicago, February

9, 1937, with an attendance of more than 20 veterinarians. Dr. Cornelius Vanderwarf presided.

Dr. O. B. Nugent, an eye specialist, of Chicago, gave an illustrated talk on the eye. He presented some interesting facts concerning the use of medicinal agents for the eye, and some surgical procedures for emergency cases. He related his experiences in India in eye surgery on large groups of natives in an out-door operating-room. The discussion of eye troubles in animals was given by Drs. J. V. Lacroix and J. B. Jaffray.

A place for future meetings was discussed. An invitation from Dr. W. A. Young, to hold the March meeting at the headquarters of the Anti-Cruelty Society, was accepted.

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### Eastern States Veterinary Conference

The New York State Veterinary Medical Society has invited the veterinary medical associations of the eastern states to cooperate in holding one big joint meeting this summer, instead of meetings in the individual states. The purpose is to pool all interests in programs and clinics in an endeavor to get the best talent available and have a gala meeting. The associations of Pennsylvania, New Jersey, Maryland, Delaware, the District of Columbia, and the New England states have approved the plan and a rousing good meeting is assured. The Organizing Committee, consisting of members from all participating states, extends a most cordial invitation to all veterinarians to be present.

All meetings, clinics, demonstrations, exhibits and entertainment will be at the Hotel New Yorker.

Reserve these dates: July 7-8-9. More complete information and your personal invitation will follow soon. It will be a gala meeting. Don't miss it!

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### The Black-Widow Spider

It is believed that the black-widow spider was known long before the discovery of America. According to H. F. Abbott, writing in *Our Dumb Animals*, the malignity of this spider apparently was known to western tribes of Indians. These Indians told early anthropologists that a deadly poison, used on the head of the hunting arrow, was more to be feared than the fangs of a rattlesnake. It is believed that this poison had reference to the venom of the black-widow spider. Zoölogists state that the name of this spider is derived from the fact that the spider injects not only a poisonous fluid into its prey and enemies, but has a reputation for destroying its mate.

# NECROLOGY

## EDWIN L. QUITMAN

Dr. E. L. Quitman, prominent leader among the older group of the veterinary profession passed from this life at his home in Chicago, February 13, 1937, after a lingering illness which he had battled courageously for nine years following a major abdominal operation. His mortal remains were laid away at



DR. E. L. QUITMAN

Graceland Cemetery in that city, amid a legion of relatives, friends and colleagues who gathered at Hursen's palatial funeral home in Michigan Avenue to mourn the passing of a beloved figure from their *entourage*, for "E. L.," as he was affectionately called by hosts of admirers in every nook of the country, won and retained that rating through nearly half a century of outstanding activities as a teacher, clinician and author. To

have won the universal admiration that Doctor Quitman enjoyed is indeed a citation, but to have been admired most by those who knew him best is the revealing decoration of his life.

Born in Saint Francisville, La., January 23, 1870, the son of a veterinarian, Dr. P. A. Quitman (C. V. C. '85), pioneer Chicago practitioner, Doctor Quitman entered practice after his graduation from the Chicago Veterinary College in 1891 and simultaneously occupied the chair of materia medica and therapeutics at his alma mater, a position he retained until the college closed in 1920. During the last few years of the existence of the college, he presided as dean of the faculty, all of the while, however, conducting a private practice of no mean importance in his West Van Buren Street hospital, a landmark of the veterinary service of this country where his successors continue to carry on.

Doctor Quitman's professional life was fifty years of untarnished record, full of precept and example on duty and ethical conduct, not to mention many technical achievements which posterity may henceforth enjoy. His faith in the importance of veterinary medicine and his devotion to association work were incessant and his contributions endless. Living as he did during the building of a veterinary profession in the American Republic, where none existed before, his tireless labors in behalf of scientific progress under strictly ethical standards of application, place his name among the architects of our undertaking, and no man under equal circumstances could have participated more earnestly to its advancement.

The fine faculty of dividing one's busy moments with equal ambition between self-preservation on the one hand and professional philanthropy on the other, is the attribute one is compelled to emphasize in the biography of our departed colleague. But, "E. L." was more than a strong advocate of organized veterinary medicine. He was a profound student, a great reader and teacher, and a classical clinician, always up to date even in branches entirely foreign to his own work. His library, office, pharmacy, surgery and hospital, neat, practical, complete, where colleagues were always warmly welcomed, testified to his character.

Beyond his immediate surroundings, he was best known in the field of chemotherapy, the branch he taught for so many years from a background rich in clinical experience and a keen sense of observation. To him those who challenged the virtue of drugs properly employed did so from lack of knowledge. He practiced what he preached and he preached from an unusual



knowledge of contemporary medicine plus the wealth of experience he brought to the class-room and to the literature.

Perhaps, the greatest debt we owe to Doctor Quitman was his revolutionary revision of the old orthodox posology handed down from human medicine and guesswork which he found erroneous early in his career, when dosage for all conditions was dismissed with a line or two of deceptive figures following long discourses on less significant factors. When, how, how much and how often to dose a patient were logical addenda to the stereotyped customs of the clinic. The modern dosage of potassium iodide in actinomycosis of cattle, of salicylic acid in acute indigestion of horses, of guaiacol in respiratory infections, of potassium dichromate as a microbicide, and of morphine in large doses as an anesthetic are but a few examples of his revisions in posology which became universal standards.

It would also be an unfair omission not to point out his quick adoption of aseptic surgery when Listerian methods came upon the veterinary field in the nineteenth century and not a few outstanding figures were still debating over the germ theory of disease. Never being behind the times in anything with hopeful prospect in the treatment of disease, Quitman embodied the Listerian doctrine with confidence of its applicability to animal surgery, early in his professional life, and to the end of his long career, we believe without fear of contradiction, his percentage for primary unions and preventable infections was far above the average.

Neither eulogy nor elegy can overstate the honor the veterinary profession owes to Doctor Quitman, who leaves behind memories of an abundant life among a legion of mourning survivors.

Dr. Quitman joined the A. V. M. A. in 1896. He was a member of the Committee on Pharmacy, 1900-1904; resident secretary for Illinois, 1902-1904 and 1925-26; member of the Committee on Necrology, 1906-07; member of the Committee on Resolutions, 1907-08 and 1926-27; chairman of the Special Committee on Association Seal, 1907-10; chairman of the Committee on Finance, 1915-16; member of the Committee on Veterinary Biologics, 1924-25; member of the Committee on Proprietary Pharmaceuticals, 1928-34; and a member of the Committee on Local Arrangements for two Chicago conventions of the A. V. M. A. (1909 and 1933). He was a charter and life member of the Chicago Veterinary Medical Association and served as president for two terms. He was a member of the Illinois State Veterinary Medical Association and frequently served the organization in a number of capacities.

L. A. M.

## BENJAMIN McINNES

The best loved veterinarian south of the Mason and Dixon Line, Dr. Benjamin McInnes, passed away at his home in Charleston, S. C., March 5, 1937, after having celebrated his 85th birthday on January 4 last.

Dr. McInnes' father, Benjamin McInnes, came to Charleston, more than a hundred years ago, as a young man from Muthill, Perthshire, Scotland. Having learned the trade of horseshoer in his native village, he became proprietor of the most successful blacksmith shop in his adopted city, employing as many as eight horseshoers, all of them slaves, only a few generations from their ancestral Africa, and to these slaves he was at once teacher, friend and preceptor, as well as owner. Tales are still told in Charleston of his feats of strength and of his skill with horses. No slave excelled him in muscle or skill, and to this day, there are several blacksmiths whose fathers or grandfathers learned their trade from "Massah Ben."

In the absence of graduate veterinarians, Massah Ben became the leading practitioner of the Low Country of South Carolina and his son learned horseshoeing and veterinary medicine at his father's knee. Not content with being a veterinarian without a scientific as well as a practical training, the younger Benjamin attended classes in the Charleston Medical College and spent two years in Scotland, at the Veterinary School in Edinburgh, under Professor Williams, and followed this great teacher in the split from the (Royal) Dick College. Following graduation and being accepted as a member of the Royal College of Veterinary Surgeons, in 1874, he returned to Charleston, where, after his father's death, he continued as proprietor of the blacksmith shop and practitioner, soon becoming the first State Veterinarian of South Carolina.

As one of the founders of the South Carolina Association of Veterinarians, he served as President of this body, as an officer of other southern veterinary associations, and as a member of his state examining board, and was regarded by the increasing number of graduates in practice in South Carolina as the Dean and "Grand Old Man" of the profession.

Dr. McInnes married his cousin, Mary Palmer Kater, of Philadelphia, whose mother, like his own, was born Kidd, nearby his father's home in Scotland. A lovely family of children was born to this union; the eldest son, named George Fleming, after the great English veterinary surgeon, was unfortunately fatally injured in an automobile collision in 1928. "Doctor Fleming," as

he was known throughout South Carolina, in spite of a crippling injury in childhood, was at once one of the most skilled and scientific exponents of veterinary medicine and surgery and a skillful surgeon, urologist and pioneer in x-ray photography. He learned veterinary practice as a child (like his father before him) and continued as "consultant" to his father and younger



DRS. BENJAMIN MCINNES AND J. C. FLYNN AT THE MEETING OF THE SOUTH CAROLINA ASSOCIATION OF VETERINARIANS, SUMTER, JULY 6-7, 1936.

brother, after being graduated from the Charleston Medical College and engaging in medical practice. Dr. Benjamin Kater McInnes, a graduate in medicine as well as veterinary medicine (U. P. '11), continues the veterinary practice in the third generation, as well as carrying on his brother's medical specialties, and his eldest son, in turn, is a student in the Charleston Medical College. Dr. McInnes is survived also by three daughters.

Dr. McInnes joined the A. V. M. A. in 1876 and with Dr. C. W. Crowley, of Saint Louis, Mo., shared the honor of being

the two oldest members on the roll. Both were placed on the Honor Roll of the A. V. M. A. in 1933. Dr. McInnes served as Resident Secretary for South Carolina (1891-1900 and 1901-02) and as a member of the Finance Committee (1902-03). He was elected Third Vice-President in 1926. At the meeting in Atlanta, in 1932, Dr. McInnes was awarded a gold medal, along with Dr. Crowley, Dr. Lester H. Howard and the late Dr. J. C. Meyer, as a token of his long membership in the A. V. M. A. He was a member of the Twelfth International Veterinary Congress and Phi Zeta.

E. W.

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### HORACE WINFIELD BOYD

Dr. Horace W. Boyd, of Nyack, N. Y., died in the Nyack Hospital, November 29, 1936. He had been in poor health for several months and had entered the hospital two months previous to his death.

Born in Wilmington, Vt., December 22, 1860, Dr. Boyd attended grammar school in Wilmington and high school in New York City. He was graduated from the American Veterinary College, of New York City, in 1897. He engaged in general practice until about two years before his death, when he retired. He served his village as mayor, trustee and water and sewer commissioner between the years 1906 and 1929.

Dr. Boyd joined the A. V. M. A. in 1903. He was a charter member of Grant Lodge, Knights of Pythias; Rockland Lodge, F. and A. M., and Rockland Chapter, R. A. M. He is survived by his widow, one son, a brother and a niece.

R. S. M.

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### ROBERT B. DOTY

Dr. Robert B. Doty, of Safford, Ariz., died October 21, 1936. He was a graduate of the Kansas City Veterinary College, class of 1908, and practiced at Safford for many years. In 1925, he was president of the Arizona State Board of Veterinary Medical Examiners.

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### ABNER H. QUIN, SR.

Dr. Abner H. Quin, Sr., of Creston, Iowa, died February 3, 1937, following an illness of a week, from pneumonia. He had been in poor health for about two years.

Born April 12, 1865, at Snelgrove, Ontario, Dr. Quin was graduated from the Ontario Veterinary College, class of 1888. The following year, he went to Corning, Iowa, where he located in practice. He was one of the few graduate veterinarians in southwestern Iowa at that time.

Dr. Quin joined the A. V. M. A. in 1910. He was a life member and a former vice-president of the Iowa Veterinary Medical Association. He is survived by three daughters, one son, Dr. A. H. Quin, Jr. (Chi. '20), and a sister.

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### JOHN FRED MILNE

Dr. J. Fred Milne, of Parma, Mich., was killed on February 5, 1937, when he was thrown from a wagon drawn by a team of young horses he was driving. Dr. Milne was a graduate of the Ontario Veterinary College, class of 1890, but had not practiced since about 1906. He first practiced in Ontario, later locating at Pinckney, Mich. Then he practiced at Dexter for some time. About 1906, he purchased a drug store at Cement City and later purchased a farm near Parma. He is survived by his widow (née Blanche Graham) and two sons.

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### ARTHUR ANDREW HENRY CARLEY

Dr. Arthur A. H. Carley, of Toronto, Ontario, Canada, died at his home, February 13, 1937. He had been in poor health for the past few years, but had continued his work until a few days before his death.

Born in Sophiasburg Township, Prince Edward County, Ont., in 1884, Dr. Carley was a graduate of the Ontario Veterinary College, class of 1912. He located in Warkworth, Ont., and practiced there until the fall of the same year, when he entered the service of the Health of Animals Branch, in which he was continuously employed until his death.

Dr. Carley joined the A. V. M. A. in 1916. He was a past master of Unity Lodge, A. F. & A. M., No. 606. He is survived by his widow, one daughter and one son.

W. M.

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### ROY HOUSER

Dr. Roy Houser, of Bourbon, Ind., died at his home, on February 16, 1937, as the result of an overdose of morphine, self-administered.

Born in Valley City, Ill., July 16, 1894, Dr. Houser attended high school and the Grand Rapids Veterinary College, from which he was graduated in 1918. He was located in Roanoke, Ind., for about four years before moving to Bourbon, where he had been in practice for 15 years.

Dr. Houser joined the A. V. M. A. in 1930. He was a member of the Indiana Veterinary Medical Association, the Northwestern Indiana Veterinary Medical Association, the M. E. Church at Roanoke, and the Masonic fraternity. He is survived by his widow (née Evalena Viola Barnbrock), his mother, two daughters, two sons, a twin brother, two half-brothers and two half-sisters.

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### WILLIS VERNE ELLIS

Dr. Willis V. Ellis, of Sioux City, Iowa, died at his father's home in Ames, Iowa, February 18, 1937. He had been ill since last October.

Born at Montour, Iowa, October 17, 1884, Dr. Ellis was a graduate of the Iowa State College, class of 1909, and practiced for a time at Sloan and Salix, Iowa, before moving to Sioux City. He was an inspector in the U. S. Bureau of Animal Industry at the time of his death.

Dr. Ellis joined the A. V. M. A. in 1928. He is survived by his widow (née Hattie M. Clark), his father, one daughter, one sister and one brother.

G. P. S.

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### GEORGE B. JONES

Dr. George B. Jones, of Sidell, Ill., died at his home, February 25, 1937, after a few hours of illness due to an attack of acute indigestion.

Born near Nevins, Ill., August 28, 1864, Dr. Jones was graduated from the Ontario Veterinary College, class of 1894. The following year, he went to Sidell where he located and practiced until his death. He took an active part in civic affairs, served as president of the Board of Education and supervisor of Sidell Township.

Dr. Jones joined the A. V. M. A. in 1904. He is survived by his widow, two sons, one of whom is a senior student at the Ontario Veterinary College, three brothers and four sisters.

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### HERMAN F. SASS

Dr. Herman F. Sass, of Toledo, Ohio, was killed in an automobile accident near Botkins, Ohio, on February 16, 1937, while



en route to Florida. He was 70 years old. Dr. Sass was a graduate of the Grand Rapids Veterinary College, class of 1902. Subsequently, he enrolled at the McKillip Veterinary College and received a diploma from that institution in 1909. In 1920, he retired from practice and was succeeded by his son, Dr. Clarence W. Sass (McK. '20).

### OSCAR EDWARD GLADFELTER

Dr. Oscar E. Gladfelter, of York, Pa., died at the University of Pennsylvania Hospital, Philadelphia, on February 27, 1937. At the time of his death, he was conducting a small-animal practice.

Born October 29, 1895, at New Freedom, Pa., Dr. Gladfelter attended schools in York County and the Dwight L. Moody School, at Northfield, Mass., before entering the University of Pennsylvania. Shortly following his graduation in 1917, he was commissioned as second lieutenant in the Regular Army and reported for duty with the 11th Cavalry at Fort Oglethorpe, Ga. On December 5, 1918, he was promoted to first lieutenant. On April 7, 1919, he was ordered to Chicago, Ill., for a course of instruction in meat inspection and, the following month, he was assigned to San Juan, P. R. On April 20, 1920, he was discharged from the temporary commission and recommended for promotion to first lieutenant in the Regular Army. He resigned from the Veterinary Corps in 1922, with the rank of captain, and entered practice at York, Pa.

A mention of some of the extra-professional activities of Dr. Gladfelter will reveal the range of his interests and the humanitarian direction of his thoughts. In 1926, he inspired the formation of the York County chapter of the S. P. C. A., serving as its agent to the time of his death. For several years he gave a 30-minute radio talk daily in the interest of animal and bird life, a series thoughtfully prepared and delivered with a pleasant grace which was most persuasive.

Dr. Gladfelter joined the A. V. M. A. in 1923. He was a member of the Twelfth International Veterinary Congress, the Pennsylvania State Veterinary Medical Association, the Conestoga Veterinary Club, the Harrisburg Dog Club and Omega Tau Sigma Fraternity. He is survived by his widow (née Martha Vadenwhitt), his parents and one brother.

A. H. C.

### WILLIAM COX

Dr. William Cox, who practiced at Mayville, Mich., for more than 45 years, died March 6, 1937.

Born in Milton, Ontario, Canada, December 20, 1865, Dr. Cox was graduated from the Ontario Veterinary College in 1888 and practiced at Conkarbin, Ontario, for three years before he located at Mayville.

Dr. Cox joined the A. V. M. A. in 1916. He is survived by one son, one daughter, three grandchildren, three brothers and two sisters.

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### EUGENE JARVIS MOORE

Dr. Eugene J. Moore, of Winston-Salem, N. C., died at the Duke Hospital, Durham, N. C., March 9, 1937, after an illness of two months. Pellagra and heart trouble were the cause of death.

Born in Iredell County, N. C., April 29, 1898, Dr. Moore attended local schools and North Carolina State College. He received the degree of Bachelor of Science in Agriculture from the latter institution in 1918. Later he entered Ohio State University and received his veterinary degree with the class of 1921. Following his graduation, he practiced successively in Savannah, Ga., Lenoir, N. C., and North Wilkesboro, N. C. In 1925 he located in Winston-Salem and practiced there until his fatal illness. During the World War he was commissioned as second lieutenant, and at the time of his death, held a commission as first lieutenant in the Veterinary Reserve Corps.

Dr. Moore was a member of the North Carolina Veterinary Medical Association, the American Legion, Exchange Club, North Wilkesboro Masonic Lodge and the First Baptist Church. He is survived by his widow (née Ethel Vannoy), one son, his parents and one sister.

J. H. B.

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### FRANK WHITE SIMONS

Dr. Frank W. Simons, formerly of Columbus, Ohio, died in Sarasota, Fla., March 17, 1937. He was 68 years of age and had spent the past two years in Florida in the interests of his health. Dr. Simons was a graduate of the Ontario Veterinary College, class of 1889, and practiced in Columbus for about 28 years before engaging in other fields. He is survived by his widow, Mrs. Clara K. Simons.

## PERSONALS

### MARRIAGES

DR. C. B. BARBER (Colo. '30), of Harrison, Ind., to Miss Mabel Taylor, of Lawrenceburg, Ind., at Batesville, Ind., December 21, 1936.

DR. KEITH R. FRICK (Mich. '36), of Mio, Mich., to Miss Vivian Kane, of Lake City, Mich., at Cadillac, Mich., December 22, 1936.

DR. RICHARD A. HUEBNER (U. P. '36), of Coatesville, Pa., to Miss Miriam M. Davis, at Philadelphia, Pa., December 31, 1936.

### BIRTHS

TO DR. and MRS. SAMUEL G. PAUL, of Clarence, Iowa, a son, Norman George, January 25, 1937.

TO DR. and MRS. M. W. OSBURN, of Independence, Iowa, a son, Bennie Irve, January 30, 1937.

TO DR. and MRS. C. C. MORRILL, of Manhattan, Kan., a son, Ronald Foster, February 8, 1937.

### PERSONALS

DR. J. W. HARRISON (Colo. '35) has removed from Portland, Ore., to Coquille, Ore.

DR. J. E. B. MOUW (K. S. C. '35), formerly of Garretson, S. Dak., has removed to Edgerton, Minn.

DR. C. H. HAASJES (Gr. Rap. '18), of Shelby, Mich., spent several weeks vacationing in Florida recently.

DR. BERNARD MANN (U. P. '17) has removed from 1536 North 8th Street, Philadelphia, to Bala-Cynwyd, Pa.

DR. J. C. SCHWABLAND (Mich. '35), has taken over the practice of Dr. E. C. W. Schubel, at Blissfield, Mich.

DR. CARL J. WALLEN (O. S. U. '23) reports a change of address from Atascadero, Calif., to Glendale, same state.

DR. HERMAN C. FISCHER (Gr. Rap. '11), of Alden, Mich., was recently elected to the office of Antrim County School Commissioner.

DR. BRYAN F. LOTT (Iowa '31), of Gresham, Neb., has taken over the practice of Dr. P. C. Herzer (Corn. '17), at York, Neb.

DR. CHAS. BIRMINGHAM (K. C. V. C. '11) has resumed practice at Ovid, Mich., after 15 years of inactivity caused by ill health.

DR. J. WM. G. HANSEN (Gr. Rap. '06), of Greenville, Mich., accompanied by his wife, toured the southern states during February.

DR. L. A. RUFF (Gr. Rap. '11), of Marshall, Mich., was among the Michigan veterinarians who spent part of the winter in Florida.

DR. A. D. ZACHARY (Ind. '21), of Indianapolis, Ind., opened his hospital to animal refugees which had been brought from the flooded area.

DR. A. I. SCHMIDT (K. S. C. '28) has sold his practice at Monona, Iowa, and has moved to Kansas City, Kan., to engage in small-animal practice.

DR. WARREN P. S. HALL (Mich. '20), Health Department, Toledo, Ohio, has been appointed a member of the Advisory Board of *The Milk Inspector*.

DR. CLARK A. METZ (Corn. '36), recently of Crown Point, Ind., has gone to Joliet, Ill., where he has taken over the practice of the late Dr. L. J. McLaren.

DR. R. W. DOUGHERTY (O. S. U. '36), recently located at Goochland, Va., has accepted a position in the Veterinary Department at Oregon State College, Corvallis.

DRS. J. R. SKALA (O. S. U. '32) and M. J. SKALA (O. S. U. '34), formerly of Ely, Minn., have taken over the hospital and practice of the late Dr. E. L. Quitman in Chicago.

DR. PAUL L. PIERCY (Iowa '33) has resigned as Extension Veterinarian at the University of Missouri to accept a position at the Texas Agricultural Experiment Station, Bryan, Texas.

DR. ERNEST F. CHASTAIN (Wash. '35) has resigned from the U. S. Bureau of Animal Industry and has taken over the practice of Dr. R. J. Bestul (Ont. '96), at Grants Pass, Ore.

DR. J. W. GRIFFITH (Ont. '92), of Cedar Rapids, Iowa, was confined to his home for two weeks during February, nursing a fractured knee-cap, the result of a kick from an equine patient.

DR. WILLIAM N. KRAMER (O. S. U. '35) has resigned from the service of the U. S. Bureau of Animal Industry and is now a deputy live stock inspector at the Los Angeles Union Stock Yards.

DR. F. P. CALKINS (Wash. '09), of Lansing, Mich., has recovered from an operation for appendicitis and has returned to his duties as assistant to Dr. C. H. Clark (Ont. '90), State Veterinarian.

DR. ERVIN A. EICHHORN (U. P. '35) has been appointed Junior Veterinarian in the U. S. Bureau of Animal Industry and has been assigned to the B. A. I. Experiment Station at Beltsville, Md.

DR. E. E. HAMANN (Mich. '31) has resigned as City Sanitary Inspector of Lansing, Mich., to accept an appointment as special agent of the U. S. Bureau of Animal Industry at Michigan State College.

DR. CHARLES L. WHITE (K. C. V. C. '11) was retired from the service of the U. S. Bureau of Animal Industry on January 31, 1937. He was in the Packers and Stockyards Division at Sioux Falls, S. Dak.

DR. W. N. ARMSTRONG (Ont. '94), of Concord, Mich., who has been active in Boy Scout work for many years, was elected president of the Jackson County Boy Scout Area Council at a recent meeting, in Albion.

DR. D. B. MEYER (Mich. '27) has resigned as special agent of the U. S. Bureau of Animal Industry at Michigan State College, to accept an appointment with the Michigan Department of Health at Lansing.

DR. ROGER M. COCKING (Iowa '35) has resigned his position in the Department of Veterinary Anatomy at Iowa State College and has purchased the practice of Dr. A. I. Schmidt (K. S. C. '28), at Monona, Iowa.

DR. URTON MUNN (A. P. I. '33), of Athens, Ala., recently completed the construction of a small-animal hospital on his property located on Nick Davis Road, near the city limits, and plans to start building a residence in the near future.

DR. FLOYD W. HIGH (Ont. '14), of Coleman, Mich., was taken to the Midland (Mich.) Hospital the latter part of February, following an automobile accident in which he received a fractured leg and extensive bruises of the face and chest.

DR. J. M. WILSON (Chi. '09), of Winfield, Iowa, was seriously injured in February when a horse that he was treating reared and kicked him on the chin. Besides injuries to his chin, Dr. Wilson sustained a shattered elbow joint, and fractures of one arm, one knee-cap and one leg.